



CHAIRMAN OF THE JOINT CHIEFS OF STAFF MANUAL

OJ-6
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CJCSM 3320.01A
27 September 2002

JOINT OPERATIONS IN THE ELECTROMAGNETIC BATTLE SPACE

References: See Enclosure G.

1. Purpose. This manual provides planners, decision makers, and spectrum users with joint spectrum management guidance when the joint task force (JTF) is the selected command organization. The publication is intended to aid and guide the JTF establishing authority, JTF commanders and staffs, and JTF component commanders and staffs in planning, coordinating, and controlling use of the electromagnetic battle space (EMB) in the JTF operating environment. Use of the electromagnetic spectrum is pervasive in military operations and in all-functional areas and echelons of command, often in competing ways. Therefore, an effective spectrum management structure is necessary not only to satisfy the spectrum needs of military users, but also to coordinate with host nations to facilitate effective employment of this finite resource. The selection of a command organization to execute a contingency operation or crisis action depends primarily on the mission to be accomplished and the objectives to be attained. The use of a JTF is considered the most appropriate for short-notice, time-sensitive, contingency, crisis action, or special operations (relief, evacuation) expected to be of limited duration.

2. Cancellation. CJCSM 3320.01, 6 January 2000, is cancelled.

3. Applicability. In accordance with Enclosure B, reference a, policy and guidance for planning, coordinating, and controlling electromagnetic spectrum use in military operations. To develop and implement joint doctrinal concepts and associated operational procedures to achieve interoperability of information technology and national security systems capabilities employed by US military forces and, where required, with

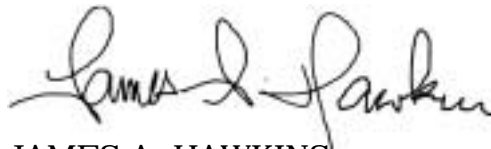
joint, combined, and coalition forces and with other US Government (USG) departments and agencies. References are provided for further reading.

4. Procedures. Controlling the EMB is key to successful military operations. This publication will guide the JTF establishing authority, the joint force commander (JFC) and staff, and subordinate commanders and staff in planning, coordinating, and controlling the EMB.

5. Summary. The objective of this document is to provide guidance on tactics, techniques, and procedures for planning, coordinating, and controlling use of the EMB in a JTF environment. Information and procedures contained herein will standardize EMB spectrum operations for JTFs. This document has been updated as an administrative annual review.

6. Releasability. This manual is approved for public release; distribution is unlimited. DOD components (to include the combatant commands), other Federal agencies, and the public may obtain copies of this manual through the Internet from the CJCS Directives Home Page--
<http://www.dtic.mil/doctrine>. Copies are also available through the Government Printing Office on the Joint Electronic Library CD-ROM.

7. Effective Date. This manual is effective upon receipt.



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Enclosures:

- A--Command Relationships in a Joint Task Force
- B--Spectrum Management Relationships in a Joint Task Force
- C--Planning
- D--Deployment
- E--Employment
- F--Redeployment
- G--References
- GL--Glossary

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ENCLOSURE A

COMMAND RELATIONSHIPS IN A JOINT TASK FORCE

1. Introduction. Command is central to all military action, and unity of command is central to unity of effort. Unity of command is the interlocking web of responsibility, which is a foundation for trust, coordination, and the teamwork necessary for unified military action. Outlined in Figure A-1 below are brief descriptions of duties and responsibilities, broken down by command echelon, to give the spectrum manager an overview of this unity of effort.

2. Combatant Command (Command Authority). COCOM is a nontransferable command authority established by title 10 ("Armed Forces"), United States Code, section 164, exercised only by commanders of unified or specified combatant commands unless otherwise directed by the President or the Secretary of Defense. COCOM cannot be delegated and is the authority of a combatant commander to perform those functions of command over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. COCOM should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate JFCs and Service and/or functional component commanders. COCOM provides full authority to organize and employ commands and forces as the combatant commander considers necessary to accomplish assigned missions. Operational control is inherent in COCOM.

3. Combatant Command. A combatant command is a unified or specified command with a broad continuing mission under a single commander, established and so designated by the President through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff (hereafter referred to as "the Chairman"). Combatant commands typically have geographic or functional responsibilities.

a. Unified Command. The unified combatant commanders (commonly referred to as COCOMs) are responsible for the development and production of contingency plans. During peacetime, they act to deter war and prepare for war by planning for the transition to war and military operations other than war. During war, they plan and conduct

campaigns and major operations to accomplish assigned missions. They will conduct this by maintaining preparedness of the command, and direct coordination with the subordinate commands to ensure unity of effort in all assigned missions, tasks, and responsibilities.

b. Combatant Specified Commands. A combatant specified commander has the same authority and responsibilities as the commander of a unified command except that no authority exists to establish subordinate commands.

4. Military Departments. The Secretaries of Military Departments are responsible for the administration and support of the forces assigned or attached to combatant commands. Each of the Military Departments and Services coordinates with the other departments, Services, and combatant commands, and have the responsibility for organizing, training, equipping, and providing forces to fulfill certain specific roles and for administering and supporting these forces.

5. Joint Task Force. The Secretary of Defense, the combatant commander, subordinate unified commanders, or an existing JTF commander can establish a JTF. A JTF is established when the mission has a specific limited objective and does not require overall centralized control of logistics. The mission assigned a JTF should require execution of responsibilities involving two or more Services on a significant scale and close integration of effort, or should require coordination within a subordinate area or coordination of local defense of a subordinate area. A JTF is dissolved when the purpose for which it was created has been achieved. A sample JTF headquarters (HQ) structure is shown in Figure A-1.

a. Joint Force Commander. The JFC will provide the superior commander with recommendations on the proper employment of assigned forces and for accomplishing operational missions assigned by the establishing commander. JFCs are also responsible to the combatant commander for the conduct of joint training of assigned forces.

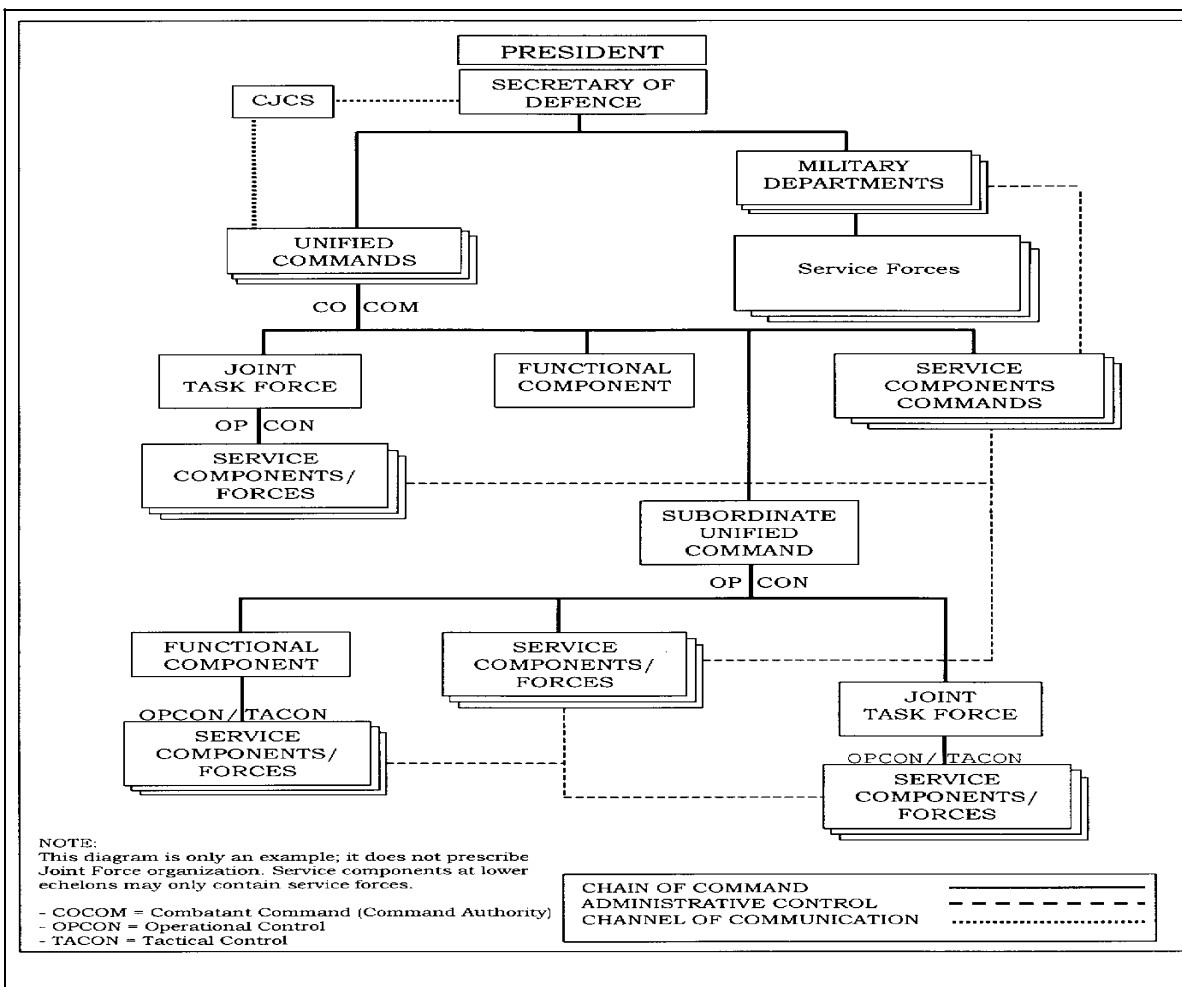


Figure A-1. Chain of Command

b. Joint Task Force Staff. JFCs may organize their joint staff as necessary to carry out their duties and responsibilities. When mission requirements exceed the staff's capabilities (for example, qualified personnel, facilities, and equipment), assistance must be requested through the superior commander. If JFCs are Service component commanders, they also draw from the resources of their components.

c. Establishing the Staff. The authority establishing the JTF should make provisions to furnish the necessary personnel, facilities, and equipment. Composition, location, and facilities of the JTF HQ have a major influence on what the CJTF and staff can accomplish (for example, an afloat JTF HQ may have limitations aboard certain flagships that could affect manning levels and equipment capabilities).

(1) Manpower and Personnel Directorate (J-1). J-1 is charged with manpower management, formulation of personnel policies, and administration of personnel of the command.

(2) Intelligence Directorate (J-2). The primary mission of the J-2 is to ensure availability of reliable intelligence and timely warnings on the characteristics of the area of operations. The J-2 also ensures adequate intelligence collection and reporting to disclose enemy capabilities and intentions.

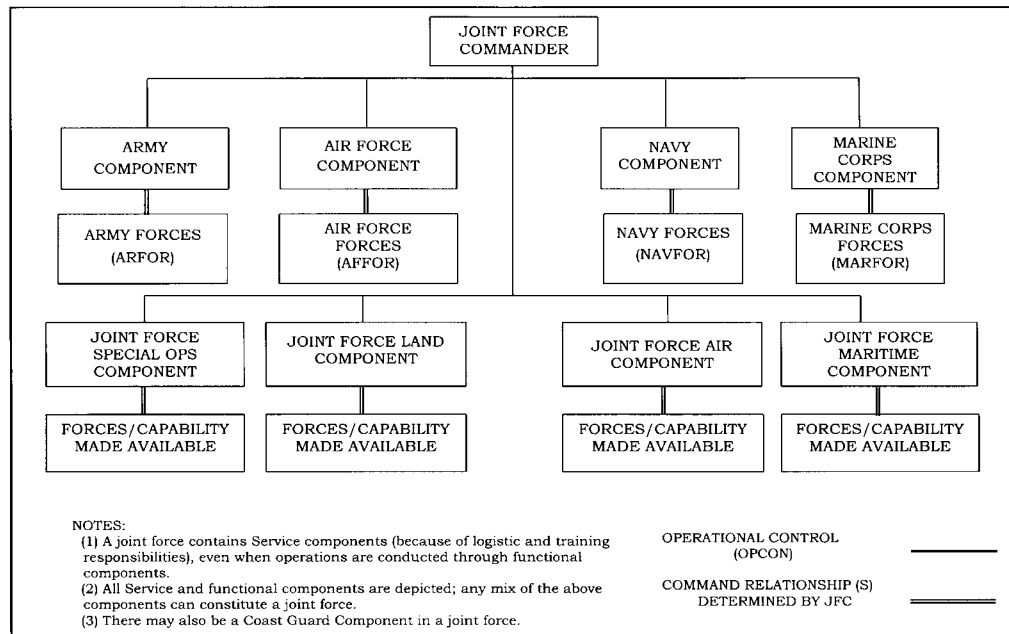


Figure A-2. Sample Joint Task Force

(3) Operations Directorate (J-3). The J-3 assists the commander in the discharge of assigned responsibility for the direction and control of operations. In this capacity this division plans, coordinates, and integrates operations to accomplish the assigned mission.

(4) Joint Information Operations (IO) Cell. The joint IO cell assists the JFC in coordinating electronic warfare (EW) operations. The joint IO cell consists of, but is not limited to, representatives from staff directorates and component commands. Members of various supporting agencies (e.g., the Joint Information Operations Center (JIOC), Joint Spectrum Center (JSC)) may augment the joint IO cell.

(5) Logistics Directorate (J-4). The J-4 is charged with the formulation of logistics plans and the coordination and supervision of supply, maintenance, repair, evacuation, transportation, engineering,

salvage, procurement, health services, mortuary affairs, communications system support, security assistance, host-nation support, and related logistics activities.

(6) Plans and Policy Directorate (J-5). The J-5 assists the commander in long-range or future planning, preparation of campaign and outline plans, and associated estimates of the situation. It also establishes coordination channels with any host nation, neutral nations, or United Nations (UN) force involved in the JTF operation.

(7) Command, Control, Communications, and Computer Systems Directorate (J-6). The J-6 assists the commander in communications, electronics, and automated information systems. This includes development and integration of C4 architectures and plans supporting the command's operational and strategic requirements. J-6 also provides policy and guidance for implementation and integration of interoperable C4 systems to implement command and control (C2).

(a) Joint Communications Control Center (JCCC). The J-6 establishes a JCCC to manage all communications systems deployed during joint operations and exercises. The JCCC, as an element of the J-6, exercises control over all deployed communications systems. The JCCC serves as single control agency for the management and operational direction of the joint communications network (reference b).

(b) JTF Spectrum Management Element (JSME). The JSME's primary function is to ensure assigned JTF military forces are authorized sufficient use of the spectrum to execute their designated missions. It will satisfy spectrum needs and ensure deconfliction, prior to assignment or allotment, of all spectrum-dependent systems including systems used by JTF and component forces, UN, NATO, coalitions, etc.

1. Although control of individually assigned frequencies is in reality exercised by each user, the supported JFC is the ultimate authority for assigning frequencies to users. The JFC normally delegates frequency assignment authority to the JSME. The JSME can further delegate frequency assignment authority to subordinate commands. The JSME also maintains a common source of spectrum-use information to ensure compatible frequency assignments and, in concert with the EW planners, publishes the Joint Restricted Frequency List (JRFL), after approval by the J-3.

2. The JSME may be assigned from the supported component's J-6 staff, from a Service component's staff, or from an external command. The JSME must be staffed with trained spectrum

managers, preferably with experience in joint operations and knowledge of the spectrum requirements of the JTF component forces.

6. Functional Component Commands. The JFC may elect to establish functional component commands to control military operations (i.e., joint force land component commander, joint force air component commander (JFACC), and the joint force maritime component commander). The JFC will designate the military capability to be made available for tasking by the functional component commander. These commands may be established for operational purposes across the range of military operations.

7. Service Component Commands. These commanders have responsibilities derived from their roles in fulfilling the Services' support function and, when designated by the JFC, may also be in the operational chain of command. They are also responsible for accomplishing operational missions, conducting joint operations, keeping the JFC informed of all decisions that may affect the overall joint mission, and are responsible for all internal administration, discipline, training, and Service intelligence matters.

ENCLOSURE B

SPECTRUM MANAGEMENT RELATIONSHIPS IN A JOINT TASK FORCE

1. Introduction. Control of the EMB is a key to successful military operations. The ultimate goal of spectrum use planning and management is to control the electromagnetic spectrum so that it serves the needs of US, UN, allied, and/or coalition forces. Another goal is to deny the enemy the use of the electromagnetic spectrum so that he is unable to command, control, or otherwise employ his forces effectively.

2. Duties and Responsibilities. Outlined below are the duties and responsibilities, IAW CJCSM 3320.01, broken down by command echelon as they apply to spectrum management of the EMB.

a. Unified Commander

(1) It is the responsibility of the unified combatant commander to establish and promulgate command-specific policy and guidance for electromagnetic spectrum-use, JRFL process, Joint Communications-Electronics Operation Instructions (JCEOI), and other processes or directives that uniquely apply to their area.

(2) Other duties are to:

(a) Establish a standing frequency management structure that includes a Joint Frequency Management Office (JFMO) and procedures to support planned and ongoing operations. Specific actions will be taken to:

(b) Ensure operational, contingency, and communications plans address coordination among forces using spectrum to enable effective exchange of information, eliminate duplication of effort, and achieve mutual support.

(c) Ensure plans address any necessary augmentation of the JFMO and/ or JSME to support the effort.

(d) Resolve user conflicts not resolved at a lower level.

(e) Maintain close contact with appropriate foreign military forces to ensure that mutual spectrum support is considered in combined planning, operations, training, and exercises.

(f) Function as controlling authority for JCEOI.

b. Joint Frequency Management Office. The responsibilities of the JFMO are to:

- (1) Develop and distribute spectrum-use plans for particular frequency bands, as appropriate.
- (2) Participate in the IO cell. Prepare and combine J-2, J-3, J-6, and component inputs to develop a proposed JRFL for approval by the J-3.
- (3) Periodically update and distribute the JRFL.
- (4) Provide administrative and technical support for military spectrum-use.
- (5) Exercise or delegate frequency assignment authority.
- (6) Maintain the common database necessary for planning and coordinating control of the EMB. This database contains spectrum-use information on all friendly military and civilian, available enemy and neutral spectrum use unique to the AOR and area of influence (AOI) involved.
- (7) Analyze and evaluate potential spectrum-use conflicts.
- (8) Assist and coordinate the resolution of spectrum-use conflicts as a member of the IO cell.
- (9) In coordination with J-5 guidance, coordinate military spectrum-use with the spectrum authority of the host nation(s) involved.
- (10) Serve as the focal point for inclusion of spectrum-use requirements in the Joint Operation Planning and Execution System (JOPES).
- (11) Receive interference reports IAW reference c and attempt to resolve incidents of unacceptable electromagnetic interference (EMI). Report all EMI incidents to the JSC. Act as the focal point for requesting joint spectrum interference resolution (JSIR) support from the JSC.

c. Joint Force Commander. Duties are to:

(1) For operations within combatant commander's AOR, follow electromagnetic spectrum use policy and guidance that are established.

(2) Work with the combatant commander's staff if modifications to the spectrum-use policy are necessary for specific situation(s).

(3) For operations outside of combatant commander's AOR, assume the responsibilities listed for the commander.

(4) Coordinate with supporting combatant commanders to determine what functions their staffs must undertake to control use of the electromagnetic spectrum and what outside support is available.

d. JFC's Staff

(1) JTF J-1. Duties are to coordinate all personnel augmentation for the JSME and ensure these augmentees are added to the time-phased force and deployment data (TPFDD).

(2) JTF J-2. Duties are to:

(a) Participate (through the IO cell) in multifunctional user spectrum-use conflict resolution.

(b) Assess intelligence needs and provide the J-6 with prioritized spectrum-use requirements for intelligence operations.

(c) Participate in multifunctional user, spectrum-use conflict resolution.

(d) Provide JRFL input.

(e) Provide the JSME with available enemy spectrum-use data IAW releasability constraints through the Director, National Security Agency (NSA), who serves as the signals intelligence (SIGINT) authority.

(f) Include spectrum-use requirements in the JOPES.

(g) Assist the J-6 and/or JSME in determining sources of any unacceptable EMI or other persistent and recurring interference.

(3) JTF J-3. Duties are to:

(a) Prioritize all spectrum use conflicts that occur to the JSME.

(b) Provide spectrum-use requirements to J-6 for inclusion in the JOPEs.

(c) Resolve internal spectrum-use conflicts (J-3 systems) when the JSME or IO Cell are unable.

(d) Provide concept of operation.

(e) Identify and resolve potential electromagnetic environmental effect (E3) hazards to ordnance, personnel, and fuel. Act as focal point for requesting ordnance assistance team support from the JSC.

(4) IO Cell. Duties are to:

(a) Provide the JFC with the capability to integrate, coordinate, and deconflict the full spectrum of EW.

(b) Assist the JSME in developing, compiling, and distributing the JRFL.

(c) Assist the component commanders in assessing instances of hostile EW and assist the JSME in assessing situations requiring EW deconfliction.

(5) JTF J-4. Duties are to provide the JSME with any required spectrum use considerations at ports of embarkation and debarkation, or waypoints during the deployment or redeployment phases.

(6) JTF J-5. Duties are to:

(a) Incorporate spectrum use into long-range and future operations planning and the IO strategy, based upon input from the J-2, J-3, IO cell, and J-6 (JSME).

(b) Establish coordination channels with any host nation, neutral nation, or UN force involved in a joint or coalition military operation to negotiate military spectrum use where procedures do not already exist.

(7) JTF J-6. Duties are to:

(a) Provide the JSME with the JTF nets to be included in the JCEOI.

(b) Assist the EW officer in integrating EW activity into operations to ensure minimum impact on friendly use of the EMB.

(c) Update the JRFL as required.

(d) Serve as the IO cell communications representative. Be the primary source for information on the impact of EW actions on friendly C2 nodes and the overall impact of joint EW actions on friendly force operations.

(e) Assist the JSME with coordination of the component command resolution of reported instances of interference or disruption.

(8) JCCC Staff. The duties of the JCCC are to:

(a) Manage all communications systems deployed during joint operations and exercises.

(b) Exercise control over all deployed communications systems.

(c) Serve as single control agency for management and operational direction of the joint communications network. (Figure B-1 has typical JCCC organization)

(9) Joint Task Force Spectrum Management Element. The duties of the JSME are to:

(a) Establish JTF specific guidance for managing, requesting, coordinating, and assigning electromagnetic spectrum-use, JRFL process, JCEOI, and other processes.

(b) Prepare and combine J-2, J-3, J-6, and component inputs to develop a JTF JRFL for approval by the J-3.

(c) When required, periodically update and distribute the JRFL.

(d) Participate in the IO cell representing spectrum management issues.

(e) Exercise frequency allotment and assignment authority. Authority may be delegated to issue frequency assignments or allotments to provide components the maximum latitude and flexibility in support of combat operations.

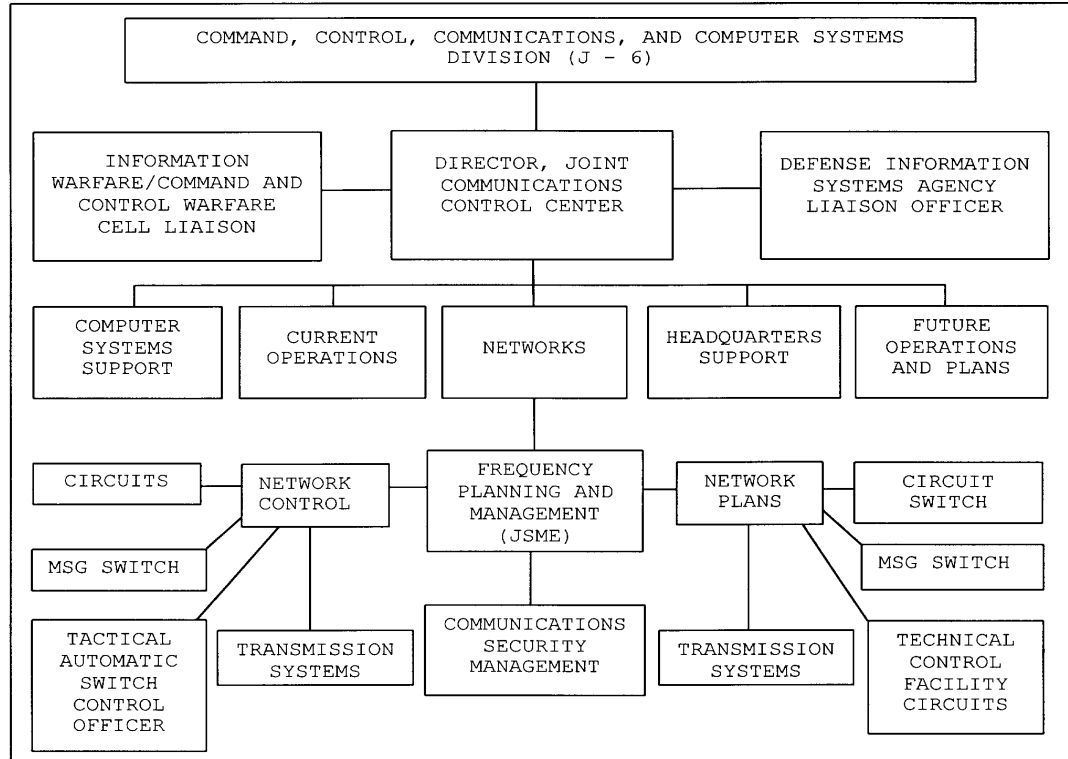


Figure B-1. Joint Communications Control Center

(f) Maintain the common spectrum-use database necessary for planning and coordinating control of the EMB. This database contains spectrum use information on all friendly military and civilian, available enemy, and neutral forces.

(g) Analyze and evaluate potential spectrum use conflicts.

(h) Assist and coordinate the resolution of spectrum use conflicts as a member of the IO cell.

(i) Coordinate military spectrum use with the spectrum authority of the host nation(s) or coalition forces involved IAW with J-5 guidance.

(j) Receive interference reports IAW CJCSI 3220.02, analyze, and attempt to resolve incidents of unacceptable EMI.

(k) Develop and distribute spectrum-use plans (see Appendix D, Annex C) that include frequency reuse and sharing schemes for specific frequency bands, as appropriate.

e. Functional Component Commanders. The duties of the functional component commanders are to:

- (1) Provide component JCEOI input to include all callwords requirements to the JCCC.
- (2) Consolidate and validate component spectrum-use requirements to the JSME.
- (3) Provide component JRFL input to the IO cell.

f. Service Component Commanders. The duties of the Service component commanders are to:

- (1) Consolidate and validate component spectrum-use requirements to the JSME.
- (2) Provide component JRFL input to the IO cell.

g. Spectrum Users. Duties are to:

- (1) Obtain frequency authorization for each use of the electromagnetic spectrum by their appropriate joint force component.
- (2) Use frequencies as assigned and operate systems IAW parameters authorized by the frequency assignment process.
- (3) Coordinate any need to exceed or operate spectrum-dependent equipment outside the parameters authorized by the appropriate spectrum-use plan.
- (4) Ensure the spectrum-dependent equipment is properly maintained to preclude unintentional violation of authorized spectrum-use parameters.

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ENCLOSURE C

PLANNING

1. Introduction. The major decisions made during the planning phase, such as the AOR, concept of operations, force structure, and deployment schedule of force elements, are essential factors that influence the determination of spectrum-use requirements. Therefore, the JFC should establish the JSME early in crisis action planning (CAP) Phase III. Otherwise, the JSME's ability to identify and anticipate spectrum-use requirements can be seriously impaired. Additionally, critical spectrum-use management and oversight during the deployment and employment phases are diluted by the reactive, rather than proactive, meeting of spectrum-use requirements that occur in the planning phase. In effect, most of the actions required of the JSME in the planning phase are carried over into the deployment and/or employment phases if they are not accomplished at the appropriate time.

2. Types of Planning. The two types of planning are deliberate planning and crisis action planning.

a. Deliberate Planning. Deliberate planning is conducted to prepare for contingent situations that could occur in a combatant commander's AOR and is based on a likely scenario rather than a specific crisis event. Deliberate planning includes developing and specifying the probable force structure (which may be a JTF) necessary to respond to the contemplated situation, but an actual force is not formed unless and until the contingency plan is executed.

b. Crisis Action Planning. The supported commander's staff usually initiates CAP. A JTF is optimally established before or during CAP Phase III, Course of Action (COA) Development, to allow the designated JTF commander and his or her staff to participate in the remainder of the CAP process. The JFC's staff must maintain a close relationship with the supported commander's staff during Phases III (COA Development) and IV (COA Selection) to ensure that planning activities are coordinated. To preclude interruptions in the planning process, the supported commander's staff must ensure that all materials pertinent to planning, such as operations plans (OPLANs) and contingency plans, are organized and available. Once the JTF is formed, the JFC and staff participate in CAP activities. During CAP Phase V, the supported commander's crisis action staff publishes the supported commander's operation order (OPORD). The JFC and staff conduct parallel, but more detailed,

execution planning and normally issue a supporting CJTF OPORD with detailed instructions to subordinates (see reference d).

3. Joint Spectrum Management Organizations. The JFMO is a standing day-to-day combatant command organization that requests, coordinates, and assigns spectrum resources within that AOR (see Enclosure B, page B-1 for detailed guidance on JFMO duties). The JSME is created in support of a JTF. The JSME's primary function is operational spectrum management in the JTF AOR. Either the JFMO and/ or JSME can perform deliberate planning and CAP. Normally, the JFMO performs all deliberate planning and the initial phases of CAP. The JSME is created, normally by CAP Phase III, and assumes the duties of spectrum management for the specific AOR, when operational.

4. Spectrum Management Considerations. To prepare for crisis, contingency, or wartime operations, realistic spectrum-use conditions must be included as the primary objective of both field-training exercises and command post exercises. This is necessary to ensure that essential players understand the processes of planning, coordinating, and controlling use of the electromagnetic spectrum in military operations. Where actual means of spectrum employment are limited in a peacetime exercise, such as restrictions on jamming, realistic simulations should be used. For peacetime exercises, planners should review Joint Universal Lessons Learned (JULL) to help determine realistic simulations to exercise spectrum employment.

5. Joint Task Force. The JTF spectrum management concept must comply with the JTF principle of centralized direction and decentralized execution. The JFMO and/ or JSME must identify combatant command and JTF HQ frequency requirements, solicit frequency requirements from component commands early, obtain the necessary frequency assets, and authorize their use by subordinate and component commands through assignments and allotments. When practical, the authority to make specific, detailed assignments to specific users should be decentralized to subordinate and component commands. In this regard, the JFMO and/ or JSME establishes spectrum policy, provides guidance and acts, in a sense, as a frequency broker by obtaining the commodity in bulk quantities and apportioning it in accordance with market demand. Only through decentralizing the frequency assignment process is the JFMO and/ or JSME able to provide oversight to the JTF's spectrum-use management functions (EW, intelligence, interference resolution, host-nation coordination, etc.).

6. Situation Assessment. An initial gathering of information is made to support spectrum-planning decision-making. Sources of this information may include the intelligence community, the JTF warning

order, pertinent contingency plans, and previous concepts of operations. This effort may include updating previously produced orders and plans with current data.

7. Spectrum Management Concept Development. This concept merges spectrum management assumptions with current known force capabilities and information updates to support decision making as situation changes and hostile actions dictate. Since assumptions and force capabilities are different for each JTF operation, and are likely to change during an operation, the concept for managing the spectrum must be tailored to the peculiar requirements of each specific JTF operation.

8. Spectrum-Use Requirements Determination. Multiple requirements for spectrum resources are identified, merged, and prioritized according to command doctrine and guidance into a single, refined statement of spectrum-use requirements.

a. Command and Control. The spectrum is used for C2 of friendly forces. C2 is embedded in and critical to the operation of some weapon systems, such as precision-guided munitions that rely on a controlling data link, unmanned aerial vehicles, and fire control radar. Communications uses of the spectrum include voice and data. Examples of these uses include C2 links between an operations center and maneuver forces, relay of intelligence and logistics data over satellite links, and coordination between air and ground forces using voice or data links.

b. Information Operations. The J-3 actively employs equipment that operates in the electromagnetic spectrum for the EW, military deception, and psychological operations (PSYOP), as well as other capabilities and related activities of IO. EW may include passive reception of enemy emissions for tactical uses. See references c, e, and f for details.

c. Intelligence. The J-2 uses the spectrum both passively and actively: passively by monitoring the adversary's use of the spectrum, and actively by using systems such as synthetic aperture radar to learn enemy location, disposition, and intent, and to receive and transmit intelligence and intelligence products.

9. Spectrum Management Plan Development. The JFMO and/ or JSME provides spectrum management guidance and support for accomplishing each of the planning tasks outlined in Appendix D. Deliberate planning for use of the spectrum resource and the assignment of spectrum management responsibilities must be fully integrated and synchronized with events described in the JOPES.

a. The complexity of effective joint spectrum use and management requires advance planning for the scenarios expected in military operations. Each joint and subordinate component command must establish planning procedures that address all spectrum-dependent equipment used in support of an OPLAN or OPORD.

b. Spectrum managers at the JFMO and/ or JSME and component forces must be fully integrated into the planning process at the earliest stages. Additionally, planning must be done in a manner consistent with that of each joint command expected to be supported. Without advance spectrum management planning, mutual EMI among users and an unnecessary shortage of available spectrum may become a severe limitation to rapid deployment and employment of forces.

10. Joint Spectrum Use-Plan. The essential role of the JFMO and/ or JSME is to develop a spectrum management plan and a spectrum-use plan. The spectrum management plan addresses coordination, control, and use of the electromagnetic spectrum throughout the JTF, while the spectrum-use plan identifies known frequency-dependent system requirements necessary for the fulfillment of the selected COA. Without this central direction, the JTF HQ and component forces could not hope to achieve optimum use of available spectrum resources and therefore would be unable to satisfactorily support the JTF COA. The spectrum management and spectrum-use plans are normally published as an appendix to the communications annex (Annex K) of the OPLAN or CONPLAN (OPLAN in concept format), which are products of the deliberate planning process.

a. The spectrum management plan must be clear and concise so that all spectrum users can understand and comply with its direction, and must be in full compliance with the COA.

b. The spectrum-use plan must be detailed enough to satisfy all known and anticipated spectrum requirements. It should include a specific list of frequencies or frequency bands required for use in support of the COA. This should evolve throughout the various phases of the operation. Appendix D, Annex C, provides an example that can be used in developing a spectrum-use plan.

c. The JFC may establish a JSME at any time. The later in the planning process the JSME is established, the more critical and time-compressed the effort is to collect and organize the necessary information affecting spectrum use and management. Regardless of when the JSME is created, the JFC, JTF staff, and JFMO have, in most cases, already started the CAP process and JOPES is likely to be in use. The JSME

must be aware that the JFC and JTF staff makes many essential decisions that generate spectrum management requirements and impact spectrum-use planning.

11. Identification of Electromagnetic Spectrum-Use Requirements. One of the primary missions of a unified command is to prepare for warfighting and other contingency actions. Therefore, planners must determine the resource requirements of component forces engaged in executing the plans of the combatant commands in advance. The requirements of the JTF HQ must be added. If plans are to be successfully executed, they must provide for critical resources, such as the electromagnetic spectrum.

a. The JFMO and/ or JSME must therefore charge assigned components to identify spectrum requirements in order to carry out their assigned missions. The JFMO and/ or JSME must also obtain the requirements of the spectrum users, primarily the J-2, J-3, and J-6 within the JTF HQ. These requirements must address both communications and non-communications (radar, weapons, etc.) systems and be stated in terms of spectrum requirements to support the force structures involved in the various contemplated contingencies.

b. The JFMO and/ or JSME must also be aware of numerous non-component frequency requirements that may surface before or during the conduct of operations. These may stem from many sources (diplomatic, media, morale and welfare organizations) and may require a variety of frequencies to satisfy (broadcast bands, high frequency (HF) amateur frequencies, commercial satellite, civil land-mobile, etc).

c. This building-block approach to identifying requirements not only facilitates obtaining and allocating spectrum resources for known requirements but also provides invaluable knowledge of the spectrum requirements of typical modules that may be called out to form a JTF or other such force in response to a short-notice crisis.

d. Failure to identify spectrum requirements in advance and to process them in modular fashion results in the JSME having to accomplish this fundamental action in a compressed time period, along with a many other last-minute details requiring its attention.

e. Users must approach the spectrum management process in a manner consistent with the combatant commander's policy for spectrum management. The J-6 usually develops the commander's policy, which includes documents such as the OPLAN and JCEOI.

f. Users at each level must identify and submit spectrum requirements and to the JFMO and/ or JSME as appropriate. Users are also responsible for detecting and reporting potential conflicts in frequency authorizations granted them, so possible interference situations may be precluded.

g. Users must obtain satellite access authority and the appropriate frequency assignments before actual activation of any satellite circuits. The J-6 Networks Branch of the supported combatant command normally consolidates and submits requests for military ultra-high frequency (UHF) and super-high frequency (SHF) satellite access on behalf of the combatant command. The operations and communications staff members should be clearly informed as to which JTF action office is responsible for these tasks.

12. Assessment of Electromagnetic Battle Space. Overall, success of JTF spectrum management planning depends on prior knowledge of the proposed EMB.

a. The EMB includes: background environmental information (BEI) and the hostile (red), friendly (blue), UN, host nation, and coalition (gray) forces electromagnetic order of battle (EOB) within the JFC's AOR and AOI (See Figure C-1). The BEI is the combination of the civil electromagnetic infrastructure and natural phenomena. The AOI is the electromagnetic environment that surrounds the AOR where a potential for electromagnetic interaction exists.

b. The J-2 is tasked with providing information on spectrum use by hostile forces. In addition, the J-5 is tasked with establishing liaison with host nations and UN forces. Any such liaison arranged by the J-5 must provide for establishing appropriate channels and working contacts for the JFMO and/ or JSME with host nation or UN telecommunications and/or spectrum management authorities. In addition, OPLANs and CONPLANs pertaining to the AOR may yield knowledge of the AOR's electromagnetic environment (EME). The International Frequency List (IFL) maintained by the Radio-communication Bureau of the International Telecommunications Union (ITU), as well as Area Studies, may also be helpful (see Table F-E-4 of Appendix E for a list of worldwide (ITU) restricted frequencies).

c. The JFMO and/ or JSME must consider any US or friendly force spectrum use occurring in the AOR in support of air, naval, reconnaissance, or special operations forces, etc., activities. A recommended practice that aids the JFMO and/ or JSME in assessing the AOR EME during the planning and employment phases of actual operations is collecting, organizing, validating, and storing information

pertaining to the EMB. This database constitutes the common source of spectrum-use information for the JTF during its existence and may serve as a planning aid for future operations.

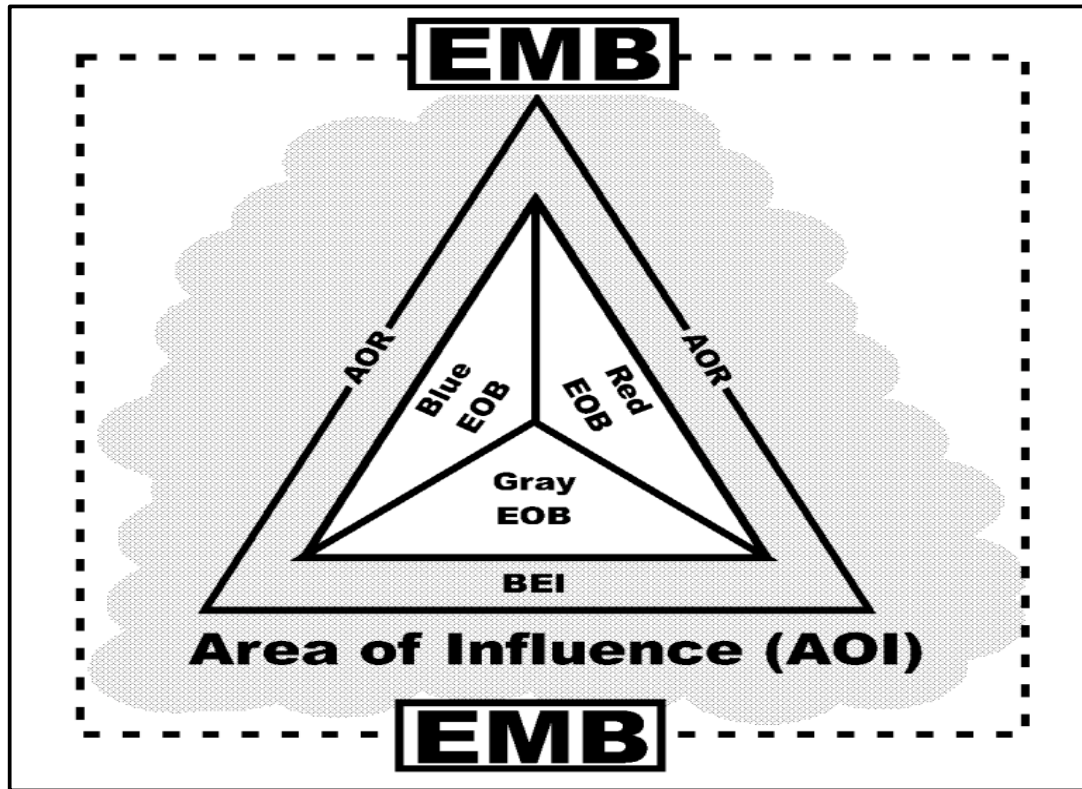


Figure C-1. Electromagnetic Battle Space

13. Authorization of Friendly Force Spectrum. Although control of individually assigned frequencies is in reality exercised by each user, the supported JFC is the ultimate authority for assigning frequencies to users. The JFC normally delegates frequency assignment authority to the JSME. The JSME can, and usually does, further delegate frequency assignment authority to subordinate commands. The JSME maintains a common source of spectrum-use information to ensure compatible frequency assignments and, in concert with the IO cell, publishes the approved JRFL.

a. Although this common source of information is necessary for maintaining overall control of spectrum use, exercising centralized control without delegating frequency assignment authority should not be practiced. Authority to assign the use of specific spectrum assets should be delegated to the lowest possible level of command consistent with:

(1) Sound spectrum management.

(2) COA.

(3) Priority of mission functions.

b. After obtaining the total spectrum-use requirements of the component forces and JTF HQ and assessing the EMB, the JFMO and/or JSME must obtain the spectrum resources necessary to support planned operations.

c. Procedures for authorizing use of spectrum are presented in Annex C to Appendix D. Fundamental to these procedures is the premise that users must be authorized sufficient spectrum, in the desired bands and with the technical parameters required to accomplish their missions.

d. In some cases, such as for combat net radios, authorization consists of calling out a specific edition of the JCEOI and/or identifying blocks of frequencies for use in specified bands with specified operating limits (generally known as allotment plan). In other cases, authorizations are for discrete frequencies, bands, or engineered frequency pairs and/or complements.

e. The JFMO and/or JSME must specify methods for components to pass data updates on frequency authorizations to or from the common source of spectrum-use information. These methods ensure the information remains current in order to facilitate the origination and engineering of follow-on authorizations. These data updates must also be exchanged laterally as appropriate.

f. The JFMO and/or JSME will specify conditions under which coordination must occur and the coordinating authorities to be involved.

14. Resolution of Electromagnetic Interference. Unacceptable EMI that adversely affects mission accomplishment may be caused by friendly, enemy, neutral, or natural sources. Incidents of unacceptable EMI that cannot be resolved locally will be reported to the JFMO and/or JSME by the users affected IAW reference g. The JFMO and/or JSME assisted by the IO cell attempts to identify and locate the source of interference and provide resolution.

a. The JTF spectrum management plan must provide for reporting and resolving unacceptable EMI. Appendix B provides procedures for reporting, classifying, and resolving EMI occurrences.

b. An additional concern is interference from JTF emitters to spectrum-dependent equipment in other countries within the JTF AOI. Affected countries may cite protection under ITU Radio Regulations (RR) that may in turn require diplomatic resolution involving the Department of State.

15. EW Deconfliction. EW deconfliction is a process to optimize the use of the spectrum. This process is used to identify and prioritize a compatible, coordinated listing of PROTECTED, GUARDED, and TABOO frequencies based upon EW, SIGINT, C3, and operational requirements.

a. The JFMO and/ or JSME involved in EW deconfliction process must consider the spectrum allocation decisions of the ITU and host-nation spectrum management regulations. To distinguish interference from hostile EW effects, the IO cell must alert the JFMO and/ or JSME to any changes in the state of friendly and enemy EW operations.

b. To assess the effects of EW on the EMB of the JTF, the JFMO and/ or JSME must know the operating characteristics of the EW equipment employed in the JTF AOR.

c. The IO cell is the primary EW deconfliction authority. The JFMO and/ or JSME, however, plays an essential role in the deconfliction process. It maintains the database of spectrum-use information and spectrum management tools for performing EW deconfliction.

16. Spectrum Management Tools. The primary spectrum management tools available to the JFMO and/ or JSME are spectrum-use information, spectrum engineering and management capabilities, and the communications with which spectrum-use authorizations and information may be exchanged and coordinated. A description of the designated automated tools currently available is contained in Appendix A.

17. Spectrum-Use Information. Joint spectrum management requires a common database of all spectrum-dependent systems within the EMB.

a. The JFC, through the JSME, is responsible for building and managing this common database. Because of the amount and complexity of spectrum-use information inherent in joint military operations, use of modern computer and communications networking systems is essential to maintain, analyze, and distribute this common spectrum-use information.

- b. Establishment of this database should begin as early as possible in the planning phase.
- c. The database is initialized by extracting records applicable to the JTF AOR from the database maintained by the combatant command.
- d. The database is then augmented with additional information on red force spectrum-use (as provided by the J-2), gray force spectrum-use (derived by research or liaison), and blue force spectrum-use (JTF).
- e. The database is kept current as changes occur.

18. Spectrum Engineering and Management Capabilities. Tools such as those described in Appendix A provide the spectrum manager with many capabilities. Examples include:

- a. Selection of candidate frequencies to meet specific requirements.
- b. Modeling the probable performance of a transmitter at specified locations and under given circumstances.
- c. Formatting the data necessary to nominate the selected frequencies for authorization.
- d. Effecting and recording coordination action.
- e. Authorizing and recording spectrum-use in the common spectrum-use database.
- f. Spectrum XXI, a personal computer (PC)-based system that supports the spectrum manager in peacetime and during contingency operations. It is intended to support a JTF operational plan as well as manage the spectrum with emphasis on assigning frequencies, EW deconfliction, and JRFL development during operations.

19. Communications. The distribution and exchange of spectrum-use information throughout the JTF is essential if the principles of planning, coordination, and control are to be attained. The primary tool used by the JFMO and/ or JSME to aid in the timely distribution of data is the SIPRNET. Successful communication of spectrum-use information depends on the existence of telecommunication paths, data networks using these paths, and common data exchange formats.

- a. Telecommunications. To ensure communications paths are available when SIPRNET is not, the JSME must plan for means of

communications to the supported commanders, assigned and supporting forces, the host nation, and other organizations involved.

(1) If critical spectrum-use message traffic is adversely affected by delays, the JSME must explore alternative telecommunications paths or means.

(2) The JSME should ensure that accounts are established on a regional spectrum management database to provide a means of transferring and coordinating spectrum-use information.

b. Common Data Exchange Formats. Common data exchange formats are essential if spectrum-use information for all participants is to be exchanged. Reference a specifies the standard frequency action format (SFAF) as the common data exchange format for use between US forces and some allied nations. When the US Message Text Format (USMTF) is required to electronically transmit spectrum-use information, the formatted information can be included as free text in the Remarks portion of the message, with appropriate delimiters as prescribed by the Military Communications-Electronics Board (MCEB).

c. Other Formats. Other data exchange formats may be specified as required by the combatant command, based on the location and circumstances of a given operation. Such may be the case in exchanging spectrum-use information with host nations (particularly lesser-developed nations) or UN forces where narrative descriptions of a frequency transaction may be the only way to convey the information.

20. Techniques and Procedures

a. Generally, the spectrum management infrastructure follows established command relationships. The JFMO and/ or JSME must ensure that all spectrum management organizations associated with the JTF, internally and externally, are aware of the spectrum management infrastructure, particularly if any variances from the established command relationship infrastructure exist.

b. The JFMO and/ or JSME must anticipate the need to effect spectrum coordination with external UN, allied, coalition, or US forces. The JFMO and/ or JSME must also anticipate the need to coordinate and obtain frequency assets from foreign governments (host nations and other foreign governments whose BEI may be adversely affected by JTF operations or forces transiting to and from the JTF AOR). If a need for such coordination is identified, the JSME must request this authority as early in the planning process as possible. Annex C of Appendix D provides an example of a spectrum-use plan.

21. Execution. The planning phase officially terminates when the OPOD is executed. The communications plan supporting the operation is normally published in Annex K of the OPLAN. Annex C to Appendix D provides an example of a JTF spectrum management plan.

ENCLOSURE D

DEPLOYMENT

1. Introduction

a. The initial phases of a JTF operation consist of predeployment, deployment, and buildup. These phases involve planning, loading, transport, and assembly in the AOR of assigned forces. Transport may be by land, sea, or air or a combination thereof. Before the commencement of the deployment and buildup phases, the JSME should be functional. The JSME must know the embarkation, debarkation, and waypoints spectrum requirements of the JTF component forces to assign and allot the necessary spectrum. These authorizations are especially critical for forces that may have missions in an initial assault, if planned for the operation.

b. Effective control of the spectrum is extremely difficult when units rapidly change locations and communications lines are minimal. These difficulties may be further compounded by the need to deconflict the initial JTF spectrum-use plan with frequencies already in use in the AOR. Additionally, any changes in the COA, a result of recently updated intelligence reports, will require a commensurate adjustment of the spectrum-use plan. The level and tempo of buildup in the AOR presents the JSME with many challenges as it responds to the rapid gathering of forces, refines the assessment of the EMB, and makes required changes to the spectrum-use plan. In effect, planning tasks carry over into the deployment phase.

2. Predeployment. After the OPORD is executed the following steps must be accomplished:

a. The JFMO and/ or JSME needs to ensure that communications are available to link all spectrum management elements.

b. An example of communications means that are available and often used are secure (STU-III) commercial and DSN phone lines, SIPRNET, and facsimile, etc.

c. All spectrum managers must receive the initial spectrum management operational policy and procedures message, the spectrum management plan, JCEOI, and the updated JRFL. This information is

critical to planning and execution, and must be disseminated before deployment.

d. Personnel identified in the time-phased force and deployment list to augment the JSME need to be available, processed for deployment, and briefed on the mission.

e. Information must be safeguarded during all phases, especially during predeployment due to its criticality. Essential elements of friendly information (EEFI) must not pass to hostile forces or to those who do not have the "need to know."

3. Deployment. In addition to the challenges of exchanging spectrum-use planning, coordination, and control information, the JFMO and/ or JSME must respond to events that develop during the deployment phase that change spectrum-use requirements. Such events could provide new and different intelligence information regarding enemy spectrum use (J-2); non-JTF activities in the AOR; changes in force composition, tactics, and COA (J-3); or changes to the communications plan (J-6). Consequently, the JFMO and/ or JSME may have to modify the spectrum-use plan of the applicable OPLAN and/or OPORD.

a. The JFMO and/ or JSME must ensure that all modifications to the spectrum-use plan are coordinated and disseminated to component forces and other involved organizations. This task is extremely critical and difficult to accomplish due to the transient state of forces concerned. The JFMO and/ or JSME must ensure this essential information reaches every intended participant in time to permit appropriate reaction.

b. The JFMO must transition operations to the JSME from the planning location to the JTF HQ in the AOR and notify all JTF elements. This transition plan should be included in the spectrum management appendix to the OPLAN and/or OPORD but, if not included, the JFMO must determine and disseminate such during the deployment phase.

4. Buildup. Buildup of component forces in the JTF AOR commences when the initial forces arrive, whether by forced entry or in a permissive environment (as in the case of initial assembly in a host nation to prosecute a future plan of action). In either event, frequency authorizations must be in place so the component commanders can immediately begin exercising C2 over their forces, deploying weapons systems, and functioning in the AOR.

a. Upon arriving in the AOR and positioning the JSME, the leader must reassess the EMB based on actual, on-scene knowledge and on information from component forces already established in the AOR. This

reassessment could result in updated information on the EMB that the JSME must organize, analyze, evaluate and, when appropriate, enter the spectrum-use database. The JSME must convey information critical to component force employment. The supporting JFMO will continue to forward information important to the JSME.

b. Liaison with the host nation or UN force spectrum management authorities should be solidified as soon as possible following deployment and arrival of the JSME. The JSME should coordinate with the JTF J-5 before affecting any liaison. Verification of host nation spectrum-use, requests for additional spectrum requirements, and establishment of a solid working relationship are necessary.

5. Responsibilities. The responsibilities of the JFMO and/ or JSME during predeployment, deployment, and buildup phases include finalizing electromagnetic spectrum-use requirements, reevaluating the EMB, anticipating requirements for spectrum resources, and identifying, reporting, and resolving unacceptable EMI.

6. Spectrum-use Requirements

a. During these phases, the JFMO and/ or JSME must finalize initial spectrum-use requirements. These will be subject to change as additional intelligence is acquired and as the force structure, course of action, or schedule is changed.

b. Determination of the spectrum-use requirements of all spectrum-dependent communications and non-communications systems is a continuous process, and the JFMO and/ or JSME must be alert to and anticipate changes affecting the JTF spectrum-use requirements.

7. Electromagnetic Environment Assessment. Based on updated intelligence, host-nation coordination changes in force structure, COA, and initial reports of component or non-JTF forces in the AOR, the JFMO and/ or JSME must constantly reassess the EMB. Actual changes in that environment (new emitters, receivers, topographic, and atmospheric effects) must be analyzed and used to update the JTF EMB database. All future spectrum authorizations (assignments and allotments) derived from the EMB database will depend on the accuracy and currency of this database.

8. Friendly Force Spectrum Authorizations. Because of unanticipated changes in the force structure, the JFMO and/ or JSME must anticipate new, modified, or additional requirements for spectrum resources.

9. Joint Spectrum Interference Resolution

a. As forces arrive and begin activating and employing their organic command, control, intelligence, IO, and weapons and surveillance systems, the JFMO and/ or JSME may expect to receive EMI reports. Regardless of the extent of prior planning, the introduction of large numbers of emitters into a given EMB in a constantly changing scenario may be expected to produce incidents of EMI.

b. The identification, reporting, and resolution of unacceptable EMI must be conducted IAW the procedures specified in the spectrum management plan (see Enclosure F). When EMI reporting and resolution procedures prove inadequate, or unanticipated changes make the procedures ineffective in the AOR, the JSME may request on-site assistance as outlined in reference d.

ENCLOSURE E

EMPLOYMENT

1. Introduction. Identified herein is a basis for deriving the techniques and procedures the JFMO and/ or JSME will use when engaged in providing spectrum-use management to support the employment phase of JTF operations.

2. Responsibilities

a. Responsibilities of the JFMO and/ or JSME during the employment phase of JTF operations remain essentially the same as those during the previous phases. Emphasis shifts, however, from planning for spectrum use to coordinating and controlling the actual use of the spectrum in support of the COA.

b. If not already formed and operating, the J-3 should activate the IO cell during the employment phase. The J-6, through the JSME, will assist the IO cell by deconflicting EW operations spectrum use of the JTF and by developing and publishing the JRFL (see Enclosure A, Appendix E).

3. Spectrum Use Requirements. The bulk of spectrum requirements were identified during the planning phase and, where possible, met by authorizations made during the deployment and buildup phase.

a. Spectrum use, however, is not static, and component forces may be expected to levy additional spectrum requirements as their maneuvers, missions, and dispositions change. Special operations, such as deception and creation of subordinate JTFs necessary to carry out the JTF mission, will also hasten a requirement for additional spectrum.

b. Additionally, analyzing the operational EOB against that of the AOR BEI will reveal instances where frequency substitutions and/or reallocations will be required to alleviate EMI. When possible, the JSME should satisfy these additional spectrum requirements from within existing resources (spares, reuse, sharing plans). When authorized frequency assets no longer support required re-accommodation, the JSME must seek additional assets from either a higher authority or the host nation.

c. The introduction of commercial and/or leased spectrum-dependent systems by JTF components and elements, State Department diplomatic representatives, the media, welfare and relief agencies, etc., will contribute significantly to the JSME workload. Component forces of the JTF should employ prudent spectrum-use practices and inform the JSME of their emerging spectrum requirements as far in advance as possible.

4. Electromagnetic Battle Space Assessment

a. The JFMO and/ or JSME assessment of the AOR BEI, conducted during the planning phase, constitutes a best guess based on information available at the time. Additionally, overlaying the operational EOB over that of the AOR BEI will result in the EMB. Further, the EMB will constantly change as forces redeploy and as C2, surveillance, weapons systems, and other spectrum dependent applications realign. The JSME must therefore constantly reassess the EMB and prepare to modify spectrum-use plans to accommodate these changes.

b. Solutions to spectrum-use conflicts may dictate acquisition of additional spectrum resources, thus generating a requirement for assets that must be processed as described in the paragraph above on spectrum use requirements.

5. Friendly Force Spectrum Authorization. Prior to authorizing additional spectrum, the JSME must coordinate with all affected organizations such as elements of component forces on the flanks or in the vicinity of the organization receiving the additional frequency authorization or aviation elements that may over-fly the organization receiving the authorization.

a. The JSME must enter the changed and/or additional authorizations into the EMB database so that the emitter will be considered in all future assessments and deconfliction of the frequency assignments.

b. Component forces of the JTF must keep their EMB database current. Component EMB databases must reflect all authorizations in or near their respective tactical AORs and AOIs that, due to propagation characteristics, over-flight, or other reasons, may affect a component's use of the spectrum. Component forces must report periodic updates of their spectrum-use databases to the JSME and, where appropriate, to other component forces and supporting elements of the JTF.

6. Joint Spectrum Interference Resolution. The JSME should expect EMI upon activation of spectrum dependent equipment at the start of the employment phase. If the EMI incident is unacceptable, it must be resolved. Enclosure A, Appendix B prescribes general EMI reporting, resolution techniques, and procedures. Those of the JTF should be clearly delineated in the JTF spectrum management plan.

7. Joint Commander's Electronic Warfare Staff. The JTF J-6, through the JSME, will function as a member of, or in coordination with, the IO cell (as established by the J-3). In either case, the JSME will perform two primary functions:

a. Electronic Warfare Deconfliction. EW operations within the JTF AOR or AOI must be deconflicted. As a member of the IO cell, the JSME must assess the impact of EW operations on the EMB. Appendix E describes JRFL procedures.

b. The Joint Restricted Frequency List. Members of the IO cell (primarily the J-2 and J-3 representatives) identify the frequencies that must receive various degrees of protection from JTF spectrum-use or electronic attack. The JSME compiles these frequencies, together with any frequencies similarly identified by the component forces, to produce the JRFL. The JSME organizes the JRFL, presents it to the IO cell for J-3 approval, and distributes it throughout the JTF. Compilation and production of the JRFL is a capability of Spectrum XXI (see Appendix E).

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ENCLOSURE F
REDEPLOYMENT

1. Introduction. The JTF and any or all of its component forces are subject to redeployment at any time. The JTF may redeploy in its original configuration or restructured for other operations, or it may redeploy to the respective home bases, ports, or garrisons of its constituent elements. Conversely, if changing international political events or crisis actions dictate, the JTF may redeploy in whole or be restructured and be assigned a new mission.
2. Responsibilities. To maintain effective planning, coordination, and control of spectrum use during the redeployment phase, the JSME must continue to function at the same level of proficiency and efficiency as in other phases of the JTF operation. This is particularly true when the JTF redeploy for further operations.
3. Electromagnetic Spectrum Requirements. The draw down of spectrum-use requirements needs to be as orderly as the buildup, especially if the JTF is redeploying for further operations. The requirements will transition from operations to logistic and administrative spectrum-use applications.
4. Disbandment. Redeployment for disbandment implies an orderly withdrawal. Under such conditions, operational spectrum use (C3, IO, weapons systems, etc.) to support JTF employment operations will gradually be replaced by administrative and logistic spectrum-use required to support the draw down, re-embarkation, and redeployment.
 - a. The transfer of certain JTF spectrum resources to any US military structure that may remain in place may be required if:
 - (1) The JTF mission was a relief operation or a noncombatant evacuation operation.
 - (2) The institution or restoration of a host nation governmental structure is to be carried out as a long-term objective following JTF operations.
 - b. For these operations, component forces and supporting elements gradually relinquish their spectrum authorizations as spectrum-

dependent equipment is shut down and re-embarked for transportation to home facilities.

(1) Air Force. The Air Force component may be expected to continue to operate administrative air control and terminal facilities (instead of combat or tactical) to support air transport operations engaged in redeploying the JTF.

(2) Navy. The Navy component may be expected to operate spectrum-dependent equipment at port facilities for back-loading JTF elements redeploying by sealift.

(3) Army and Marine Corps. If redeployment is to be accomplished by land movement, the Army and/or Marine Corps components will require spectrum to support motor convoy and/or rail operations. Rear guard or security forces may require spectrum support for their missions of protecting the redeployment re-embarkation facilities and maintaining order and traffic control during the redeployment phase.

c. This diversion of mission, from an operational course of action to that of an administrative and/or logistic scenario, will require the JSME to adjust the spectrum-use plan and begin planning the transition of control back to the combatant command's JFMO. Spectrum resources acquired for full JTF operations will most likely support redeployment operations but may require redistribution of frequency assets.

5. Further Operations. Redeployment for further JTF operations requires recommencing the CAP cycle. If the JTF is to be redeployed as structured, the JSME will thoroughly know the general spectrum requirements. Therefore, much of the spectrum-use plan will apply. Frequency assets required by the JTF in the new AOR will, however, have to be acquired, coordinated, engineered, and authorized.

a. If the JTF is to be restructured for redeployment, the JFMO must again:

(1) Determine and consolidate spectrum requirements (especially those of new component forces joining the JTF).

(2) Assess the EMB of the new AOR.

(3) Establish contact with spectrum management authorities of the new host nation and/or UN force.

(4) Revise the JTF spectrum-use plan to support the new course of action in the new AOR.

b. If the JTF is redeploying for further operations, the JFMO and/ or JSME must recommence the CAP process at the planning phase as described in Enclosure F, Appendix D, to support a new COA in a new AOR. The JFMO and/ or JSME must plan this concurrently with the execution of draw down, re-embarkation, and transportation spectrum-use and management functions described herein.

c. The JSME, in concert with the JFMO, should develop a transition plan to transfer spectrum management functions from the JSME to the JFMO during movement.

6. Electromagnetic Battle Space Assessment. The ongoing redeployment activities and redistribution of frequency assets will create changes in the EMB, thus hastening reassessment of that environment. As transportation facilities increase their tempo of operations and as component forces move from their deployed positions to their points of re-embarkation, the EMB within the AOR or AOI will present a constantly changing picture.

7. Friendly Force Spectrum Authorization. If the JTF redeploy to conduct further operations, the JFMO and/ or JSME will authorize spectrum use as discussed and according to the techniques and procedures presented in Enclosure F, Appendix D. If the JTF redeploy to home facilities and disbands, the JFMO and/ or JSME will:

a. Be prepared to frequently readjust the spectrum-use plan and redistribute frequencies in order to accommodate this changing scenario.

b. Reclaim spectrum resources from users, as these resources are no longer required, and return them to the control of the JFMO, host, or interim government.

8. Joint Spectrum Interference Resolution

a. Occurrences of EMI may be expected to continue throughout the redeployment phase, and the JFMO and/ or JSME must be prepared to resolve them. While the tempo of combat operations may have decreased, the tempo of unit movement and transportation operations may have increased and will take place in an ever-shrinking geographical area (reference h).

b. The JFMO and/ or JSME must determine if any further IO operations are scheduled during redeployment phase. If none are, then

resolution of EMI incidents and deconfliction will be simplified by the elimination of that factor. At some point in the redeployment phase, the JTF IO cell may cease to function as an entity in the AOR. At that point, the JFMO prepares to assume full responsibility for EMI resolution and spectrum-use deconfliction.

APPENDIX A TO ENCLOSURE F

AUTOMATED TOOLS

1. Introduction. The following are joint approved systems for use by the spectrum manager for spectrum management and JCEOI development.

2. Spectrum XXI

a. Spectrum XXI should be used in peacetime by the JTF staff at its permanent HQ to assist in planning and executing phases of exercises or contingencies, as well as in performing routine spectrum management functions. In a crisis, contingency, or combat situation, the JTF staff will use Spectrum XXI, either at the headquarters or at deployed locations to support spectrum management tasks.

b. Proponent. Joint Chiefs of Staff and the Joint Spectrum Center.

c. Point of Contact. JSC/J6, 120 Worthington Basin, Annapolis, MD, 21402-5064, DSN 281-2527, commercial (410) 293-2527.

d. Security Note. Spectrum XXI will display a security banner equal to the highest classification level of data loaded into the software. This allows operations in a TOP SECRET environment and all local security directives must be followed.

CPU	Pentium III or (fastest available at time of purchase)
Operating System	NT Workstation
Memory	128 MB RAM (more is better)
Software License	No cost registration
Floppy Drives	3.5-inch
Mass Storage	10 GB Removable Hard Disk Drive
Monitor	Color monitor
Printer	Yes
Other	CD-ROM Reader, Mouse
Graphics / Video	VGA Video Card

Table F-A-1. System Requirements for Spectrum XXI

3. Revised Battlefield Electronic CEOI System

a. The Revised Battlefield Electronic CEOI System (RBECS) is designed to generate hop sets and transmission security keys (TSKs) for the single channel ground and airborne radio system (SINCGARS) and for signal operation instructions. The system consists of the RBECS software, an NSA-developed random data generator, a user-provided PC, and either a printer or a data transfer device.

b. RBECS has also been adapted to produce JCEOIs. It can be used to generate both the umbrella JCEOI (combining generated JCEOI data from several components under the Joint JCEOI Layer) and supporting force JCEOI to support JTF operations. On 18 October 1993, the MCEB formally designated RBECS as the joint standard for the generation of JCEOIs, electronic protect (EP) variables (E-sets), and TSKs for SINCGARS and SINCGARS-compatible radios. The Joint Automated CEOI System (JACS) is the next generation of RBECS. JACS will provide a common tool that will interface between spectrum managers and communication planners, allowing for automated transfer of information that is easily understood by both parties.

CPU	Pentium II
Operating System	Windows NT
Math Coprocessor	No
Memory	64 MB RAM
Software License	No
Floppy Drives	3.5-inch
Mass Storage	5 GB Hard Disk Drive
Monitor	Color
Printer	Yes
Other	Mouse
Graphics / Video	VGA Video Card

Table F-A-2. System Requirements for RBECS

APPENDIX B TO ENCLOSURE F

JOINT SPECTRUM INTERFERENCE RESOLUTION PROCEDURES

1. General

a. EMI to C-E equipment is a continuing problem in all-military operations. While all spectrum users will at one time or another experience some level of EMI to their C-E systems, it is only when the degree of interference becomes unacceptable that positive action must be taken.

b. Although EMI may affect mission accomplishment, unacceptable EMI actually impedes operations. It may be caused by friendly, enemy, neutral, or natural sources. Generally, EMI must be solved on a case-by-case basis. Figure F-B-1 outlines procedures helpful in resolving EMI. Most interference incidents are dealt with at the lowest possible level within the JTF structure. When the cause and recipient of the interference are not within the same component force or supporting element, however, resolution becomes more difficult.

2. Resolving Spectrum-Use Conflicts

a. Spectrum-use conflicts arise as new requirements for use of the spectrum are identified, and conflicting or competing use of the spectrum should be expected. CJCSI 3220.01 states that "For conflicting or competing use that affects more than one primary functional area, the IO cell examines requirements and attempts to solve the problem in coordination with the JFMO."

b. For conflicting or competing use that affects more than one primary functional area, the IO cell examines its spectrum-use requirements and attempts to resolve the problem. If resolution is not possible at this level, the IO cell elevates the matter to the JFC or that commander's designee, usually the J-3. Automated spectrum management tools that can deconflict spectrum usage, available to the JFMO and/ or JSME, are listed in Appendix A.

3. Reporting Incidents of Unacceptable EMI. Affected users will report incidents of unacceptable EMI. Various service components are usually required and accustomed to reporting EMI incidents in a Service-prescribed format.

4. The JSIR Program. The JSIR program addresses those EMI incidents that cannot be resolved at the component or JTF level. This program is coordinated and managed by the JSC, Annapolis, Maryland. (Reference h.)

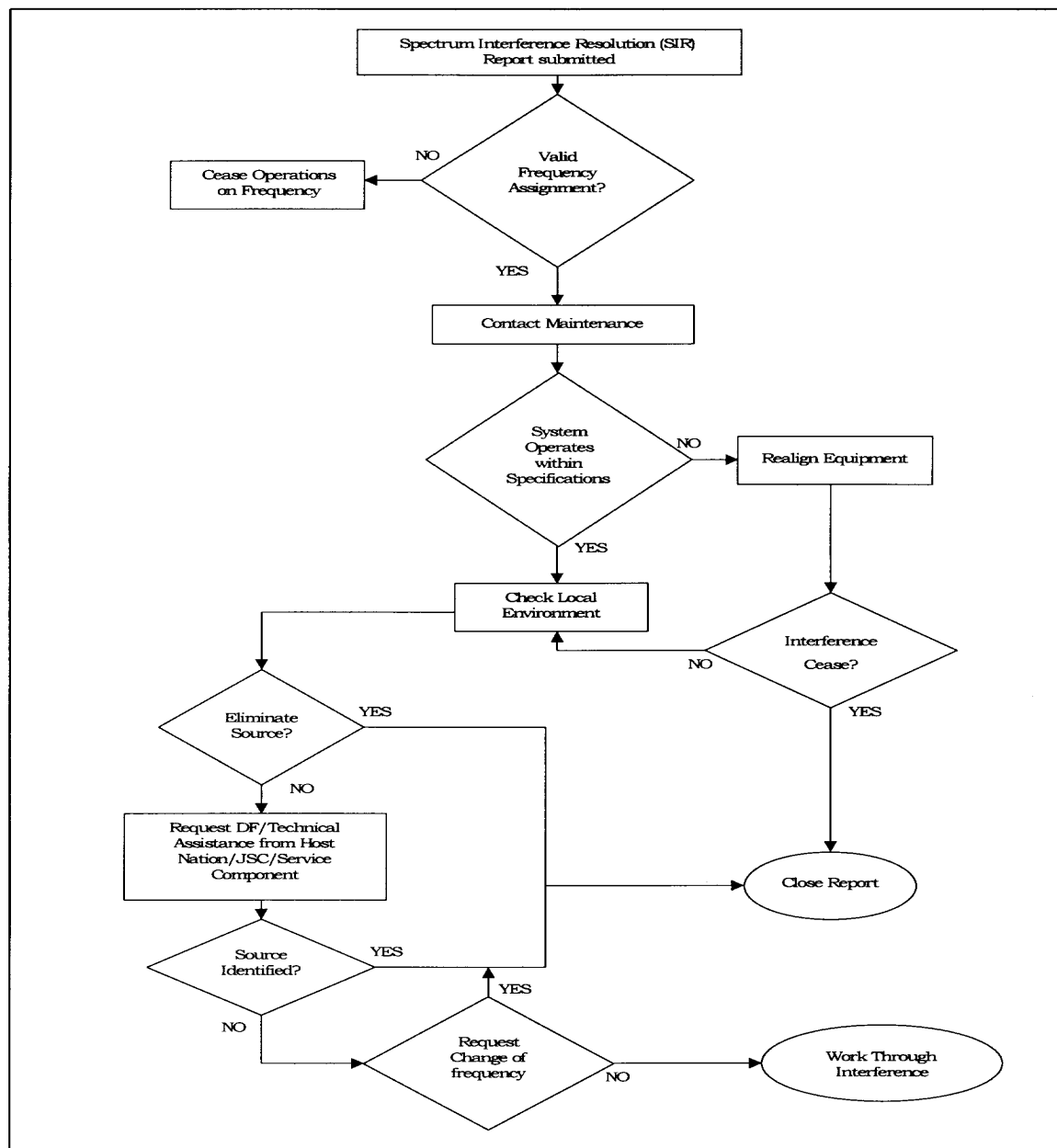


Figure F-B-1. Interference Resolution

a. The objective of the JSIR program is to assist the Services and combatant commanders in resolving persistent, recurring interference that cannot be resolved at the Services or combatant command levels.

The JSC JSIR team is comprised of active duty personnel and JSC support services contractor personnel.

b. JSC has a 24-hour capability for receiving interference reports. USMTF messages to the JSC JSIR team can be sent to JSC ANNAPOLIS MD//OP/JSIR//. The JSIR team can also be contacted via voice mail pager at DSN 281-2511, extension 7007, or commercial (410) 573-7007. Special compartment information traffic is serviced directly through secure facsimile (FAX) and DOD Intelligence Information System and/or Joint Worldwide Intelligence Communication System in the special compartment information facility at JSC, E-mail address: jscop@nsc.dodiis.

5. Minimum Report Requirements. Information required for the JSIR team to start resolving interference is as follows:

- a. The information contained in the component Service interference report.
- b. System affected by the interference (nomenclature, J/F-12 number, etc.)
- c. Frequency of the victim receiver.
- d. Area and/or location where the interference incident occurred.
- e. A description of the interference.
- f. The times and dates the interference occurred.
- g. A point of contact with DSN (and/or commercial number) and duty hours available to discuss the interference incident.

6. JSC JSIR Process. Upon receipt of a JSIR service request, the JSC JSIR team performs an analysis using JSC models and databases to determine the source, and works with the appropriate field activity and frequency managers to resolve interference problems.

a. The JSC JSIR team will deploy to the location of the victim organization if necessary to resolve interference problems. The JSIR team will provide the organization requesting JSIR services a message report of the results of the JSIR analysis and incorporate appropriate information into the JSIR database. This database supports both trend analysis and future interference analyses.

b. The general flow of the reporting and resolution procedures for interference to terrestrial users is depicted in Figure F-B-2.

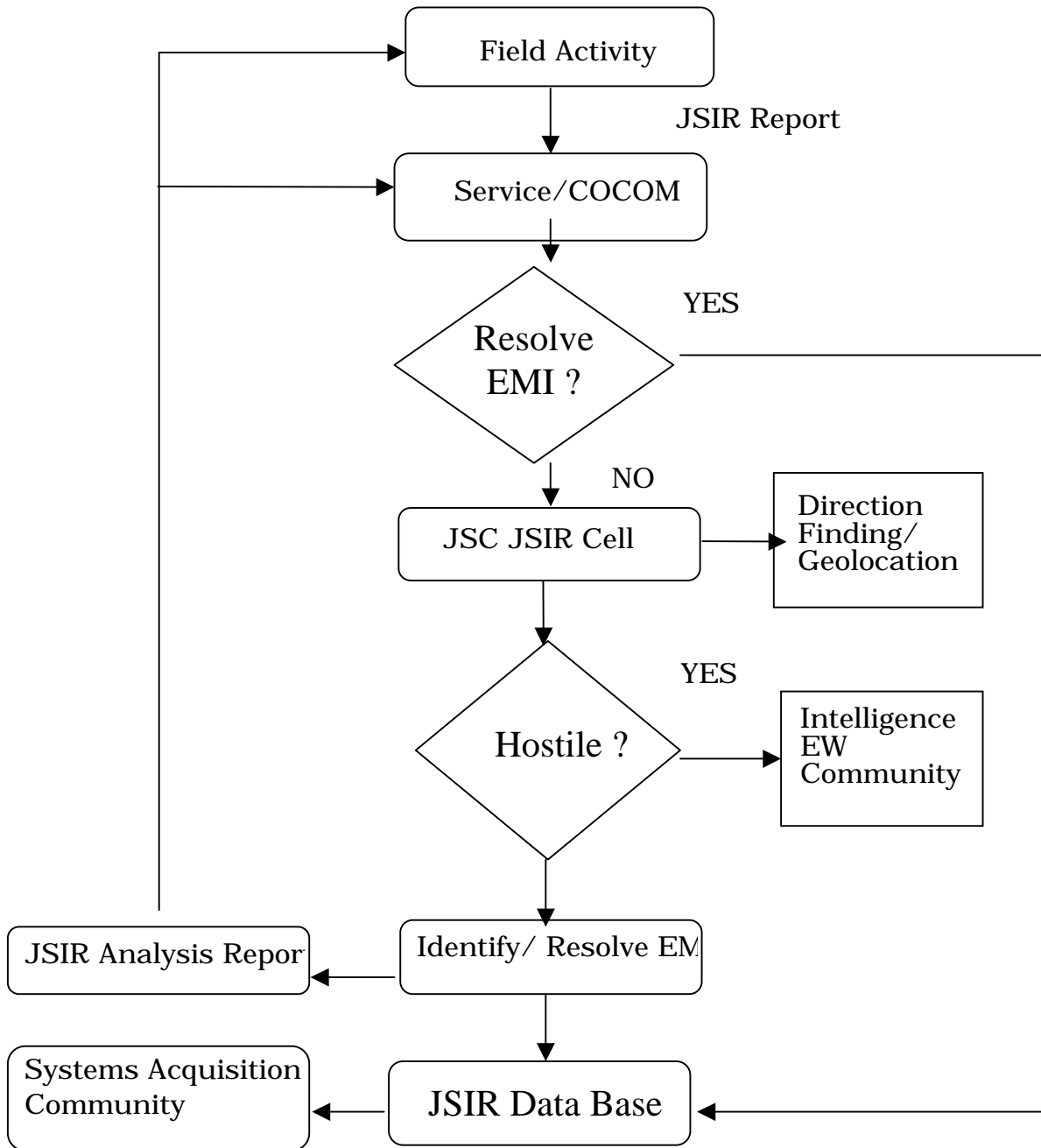


Figure F-B-2. Terrestrial JSIR Reporting and Resolution

c. Space-system interference reporting and resolution processes are similar to the terrestrial reporting and/or resolution path (See Figure F-B-3). Interference reports are forwarded up the operational chain of various space systems. Interference that cannot be resolved is ultimately reported to Cheyenne Mountain Operations Center/Satellite Communications Control (CMOC/SCC) by USSTRATCOM component command centers. The space system is considered to include both space-based and earth segments. CMOC/SCC will forward the incident report to JSC for analysis.

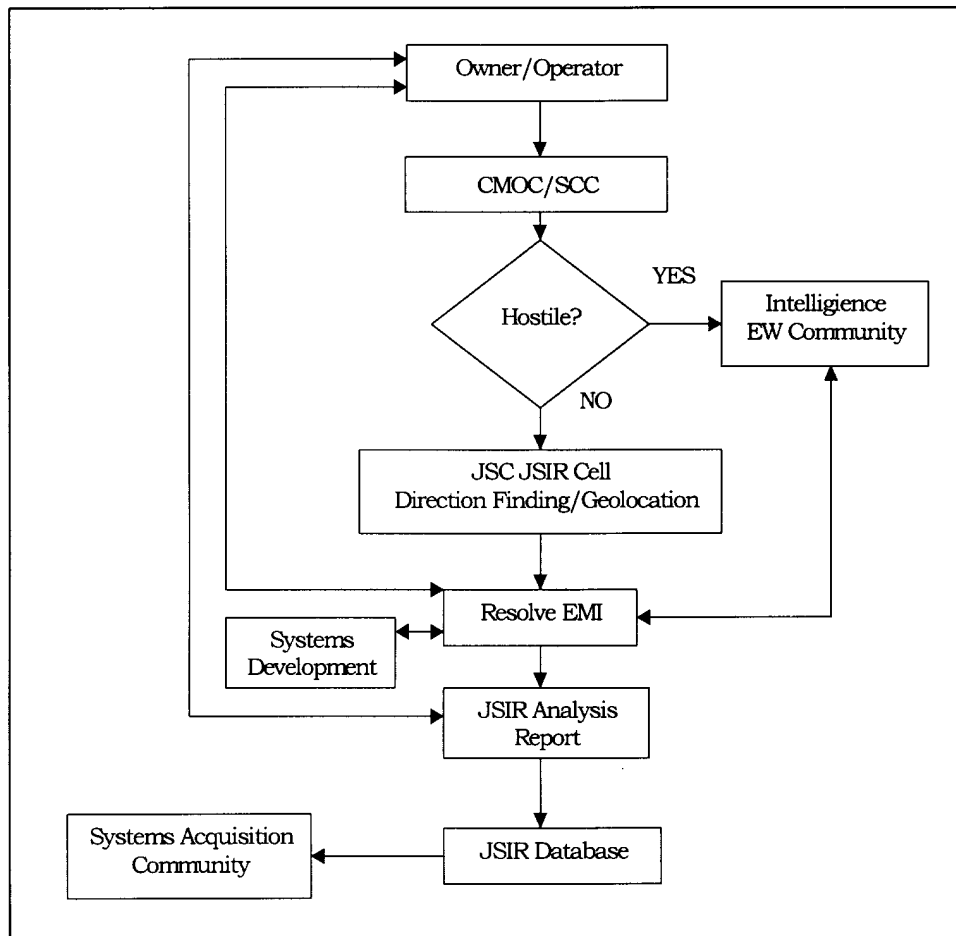


Figure F-B-3. Space Systems Interference Reporting and Resolution

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APPENDIX C TO ENCLOSURE F

SUPPORT AGENCIES

1. Joint Spectrum Center

a. Combatant Command Support Teams. The JSC support teams provide spectrum management assistance or support to the combatant commands and JTFs. Support includes: JCEOI training, JRFL training, background database support, and spectrum management training using Spectrum XXI software. The team is staffed with seven non-commissioned officers (two Navy, two Army, two Air Force, and one Marine Corps). For additional information contact JSC Support Team, DSN 281-9815, commercial (410) 293-9815/3763 (Fax); NIPRNET E-mail operations@jsc.mil.

b. JSIR Team. The JSC's JSIR team will analyze and recommend corrective action for reported interference problems by first using the JSC and JSIR databases, analytical tools, and then, if needed, by providing personnel and equipment to perform on-site direction finding, equipment testing, and problem solving. If the assistance is requested for electronic attack incidents, the JSC JSIR office will coordinate analysis, collection, and field support activities with the appropriate agencies. To request assistance from the JSC JSIR Team, contact the JSC Duty Officer at DSN 281-9857, commercial (410) 293-9857, NIPRNET E-mail operations@jsc.mil.

c. Area (Country) Studies. Area Studies provide information concerning the physical, cultural, and civil telecommunications characteristics of countries selected by the Joint Staff.

(1) Specific items addressed include: frequency management, broadcasting, telephone, telegraph, telex, data communications; aeronautical information; maritime communications; transmission systems (HF, VHF/UHF, SHF, satellite); frequency assignments, frequency assignment site maps, frequency assignment histograms for the 0.2-0.5, 2-30, 30-88, 225-400, 406-450, 600-900, 1350-1850, 4400-5000, 7250-8400, and 14500-15350 MHz frequency bands; as appropriate. The reports also contain frequency allocations for the 0.2-0.5, 2-30, 30-88, 138-174, 225-400, 406-450, 600-900, 1350-1850, 4400-5000, 7250-8400, and 14500-15350 MHz frequency bands; general propagation information for reliable in-area and long-haul

communications; groundwave planning ranges, predictions of maximum usable frequencies for short-distance HF skywave communications, HF Defense Communications System (DCS) entry reliabilities, magnetic azimuths and distances from in-area site to selected HF DCS entry stations, and look angles from in-area sites to selected geostationary satellites. Area Studies are produced on CD-ROM or as printed documents on a case-by-case basis. The CD-ROM contains files of civil frequency assignments, aeronautical frequency assignments, and broadcast frequencies in vertical SFAF format for use with Spectrum XXI. Included with the printed reports are two 3.5-inch high-density floppy disks containing the same files as the CD-ROM.

(2) JSC Area Studies are compiled from unclassified sources, are **“For Official Use Only,”** and are authorized for release to **USG agencies only**. JSC Area Studies cannot be released outside the Department of Defense without permission from the JSC. A list of countries for which studies have been completed is provided in Table F-C-1. For information, contact the JSC Area Studies Team at DSN 281-2217, commercial (410) 293-2217. To receive current area studies, contact the JSC Operations Directorate at (410) 293-9814, NIPRNET e-mail operations@jsc.mil.

COUNTRY/YEAR REPORT COMPLETED					
COUNTRY	YEAR	COUNTRY	YEAR	COUNTRY	YEAR
AFGHANISTAN	1999	GUYANA	1998	PANAMA	1989
AFRICA (SOUTH)	1989	HAITI	1996	PAPUA NEW GUINEA	1990
ALBANIA	1999	HONDURAS	1998	PARAGUAY	1990
ALEUTIAN IS.	1985	HONG KONG	1991	PERU	1996
ALGERIA	1995	HUNGARY	1997	PHILIPPINES	1989
ARGENTINA	1985	ICELAND	1991	PORTUGAL	1983
AUSTRALIA	1987	INDIA	1993	POLAND	1998
AZORES	1991	INDONESIA	1996	PUERTO RICO	1988
BAHRAIN	1995	IRAN	1995	QATAR	1998
BANGLADESH	1993	IRAQ	1994	ROMANIA	1998
BARBADOS	1989	ISRAEL	1992	RWANDA	1992
BERMUDA	1988	ITALY	1992	SAUDI ARABIA	1994
BOLIVIA	1991	JAMAICA	1988	SENEGAL	1982
BOSNIA-HERZEGOVINA	1999	JAPAN	1998	SEYCHELLES	1991
BRAZIL	1984	JORDAN	1988	SINGAPORE	1993
BRUNEI	1991	KAZAKHSTAN	1999	SLOVENIA	1999
BURMA	1988	KENYA	1994	SOLOMON ISLANDS	1994
BURUNDI	1995	KOREA (NORTH)	1996	SOMALIA	1993
CAMBODIA	1991	KOREA (SOUTH)	1997	SPAIN	1992

CANARY ISLANDS	1991	KUWAIT	1998	SRI LANKA	1993
CHAD	1987	LAOS	1992	SUDAN	1996
CHILE	1984	LATVIA	1997	SURINAME	1983
CHINA	1997	LEBANON	1981	SYRIA	1994
COLOMBIA	1997	LIBERIA	1998	TAIWAN	1996
CROATIA	1999	LIBYA	1995	TANZANIA	1979
COSTA RICA	1992	MACAU	1991	THAILAND	1993
CUBA	1995	MACEDONIA	1999	TOBAGO	1988
CYPRUS	1983	MALAYSIA	1996	TRINIDAD	1988
CZECH REPUBLIC	1997	MARSHALL IS.	1994	TRUST TERRITORY PACIFIC	1985
DENMARK	1990	MAURITANIA	1992	TUNISIA	1992
DIEGO GARCIA	1991	MEXICO	1997	TURKEY	1993
DJIBOUTI	1990	MICRONESIA	1994	UGANDA	1998
DOMINICAN REPUBLIC	1999	MOROCCO	1992	UNITED ARAB EMIRATES	1993
ECUADOR	1997	NEPAL	1988	URUGUAY	1990
EGYPT	1994	NEW CALEDONIA	1991	VENEZUELA	1999
EL SALVADOR	1989	NEW ZEALAND	1991	VIETNAM	1992
ETHIOPIA	1986	NICARAGUA	1991	VIRGIN ISLANDS	1988
FIJI	1994	NIGER	1987	WESTERN SAHARA	1992
FRENCH GUIANA	1983	NIGERIA	1982	YEMEN (NO/SO)	1990
GAMBIA	1982	NORWAY	1990	YUGOSLAVIA (FORMER)	1995
GEORGIA	1999	OMAN	1997	ZAIRE	1979
GREECE	1983	PAKISTAN	1996	ZAMBIA	1979
GUATEMALA	1992				

Table F-C-1. JSC Area Studies

d. HF Predictions and Propagation Studies. The JSC provides HF prediction and propagation studies to Military Departments to enable the user to determine circuit reliabilities for the most combinations of power, emission, and antennas. Additional information can be obtained from the JSC at DSN 281-2814, commercial (410) 293-2814.

e. Frequency Resource Record System (FRRS), Distributed Computer Facility (DCF), and SPECTRUM XXI. The FRRS is a frequency record-keeping system managed by the MCEB and used by DOD frequency managers who require frequency data and background electromagnetic environmental information. The FRRS is comprised of the Central Computer Facility (CCF) and the DCF, both located at the JSC,

Annapolis, Maryland. The DCF can access the CCF and contains, among other things, one of several computer network servers worldwide operating SPECTRUM XXI server software. DOD frequency managers access the DCF using the SPECTRUM XII client software application, thus ensuring the effective and efficient use of the electromagnetic spectrum. Area combatant commands can provide information on the requirements for establishing a user account on the FRRS within their AOR. SPECTRUM XXI client software application will be the DOD standard spectrum management system and will be used at all levels of spectrum management operations (i.e., from tactical to sustaining base operations).

2. Joint Information Operations Center. JIOC was established in October of 1999. JIOC is a direct reporting command to USSTRATCOM and serves through USSTRATCOM as the principal field agency for planning IO. The JIOC supports the integration of the constituent capabilities and related activities of IO operations security (OPSEC), PSYOP, military deception, EW, destruction, and others in joint plans and operations. Direct support is provided in the following priority order: JFCs (combatant commanders, subordinate unified commanders, and JTF commanders), functional component commanders, and Service component commanders. Support is also provided to the Office of the Secretary of Defense, the Joint Staff, Military Services, USG agencies, NATO, and allied nations. For more specific information contact the JIOC Deputy Director for Operations at DSN 969-2911.

3. National Imagery and Mapping Agency. NIMA provides Digital Terrain Elevation Data (DTED) Level 1 for use with Spectrum XXI Topographic Manager and Arc-Second Raster Chart digitized raster graphic (ARDG) formatted map data that is used for various engineering tools, to include the Mobile Subscriber Equipment Network Planning Terminal. NIMA also produces the DOD flight information publication (FLIP), which provides a good source for worldwide communications at airport facilities. Information on NIMA products may be obtained by calling the NIMA Customer Help Desk at 1-800-455-0899, commercial (314) 260-1236, DSN 490-1236, FAX (314) 260-1128, NIPRNET e-mail chdesk@nima.mil, Internet Home Page <http://www.nima.mil>.

4. US Strategic Command. USSTRATCOM publishes in message form the "Monthly Blue Space Order of Battle," which provides position and other related satellite data. For information and distribution of the Blue Space Order of Battle, contact USSTRATCOM at DSN 692-5084.

5. Air Force Space Forecaster Center and National Oceanic and Atmospheric Administration. The Air Force Space Forecaster Center, in

conjunction with the National Oceanic and Atmospheric Administration, transmits a daily solar and geophysical activity summary via AUTODIN message. This message includes the 10.7-cm daily solar flux value obtained from the observatory in Ottawa, Canada. For information call DSN 560-6264/6311, commercial (719) 567-6264/6311.

6. Background Database Information and Database Support

a. Frequency Resource Record System. The FRRS CD-ROM database contains some DOD records that are assigned worldwide. The CD-ROM is classified CONFIDENTIAL. For information and distribution, contact JSC database support at DSN 281-2511, ext. 7743, or commercial (410) 573-7743.

b. Government Master File (GMF). The GMF CD-ROM database contains government frequency assignment records within the United States and its possessions (US&P) that have been submitted to the Interdepartment Radio Advisory Committee (IRAC) for approval. This CD-ROM is classified CONFIDENTIAL. For information and distribution, contact the National Telecommunications and Information Administration at (202) 482-1132.

c. Federal Communications Commission (FCC) Records. The FCC CD-ROMs contain non-government records within the US&P. These records are available on CD-ROM by FCC region. These records are unclassified. For information and distribution, contact JSC database support at DSN 281-2511 ext. 7743 or commercial (410) 573-7743.

d. International Telecommunications Union. The ITU CD-ROM database contains records from the IFL. Nations that have notified and registered their frequency assignments with the ITU are contained on this CD-ROM. For information and distribution, contact JSC database support at DSN 281-2511, ext. 7743, or commercial (410) 573-7743.

e. NATO Frequency Management Subcommittee (FMS) and/or Master Radio Frequency List (MRFL). The MRFL database contains NATO frequency assignment records that have been converted from 14 point format to vertical SFAF records. For information contained in the FMS and/or MRFL records, contact JSC database support at DSN 281-2511, ext. 7204, or commercial (410) 573-7204.

7. Commercial Sources. The World Radio and TV Handbook provides information on international radio and television broadcasting stations as well as amateur radio stations. This book is published by Billboard Books and is available at bookstores. For information concerning this

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27 September 2002

publication, write to BPI Communications, 1515 Broadway, New York,
NY, 10036.

APPENDIX D TO ENCLOSURE F

SPECTRUM MANAGEMENT

1. Introduction. Quick military reaction to crisis situations in the world requires that pre-crisis planning be accomplished and that information be made readily available to the JFC. Combatant commanders plan and theater Service component commanders develop CONPLANS and OPLANS for possible crisis and required military operations.

2. Deliberate Planning. The JFMO performs several functions on a daily basis, which centers on preparedness for execution of contingency plans. The JFC establishes the JSME to support joint planning, coordination, and control of the EMB for assigned forces. The JFMO and/ or JSME perform spectrum-use planning, documentation, and coordination to fulfill these responsibilities. Depending on when the JSME is brought into the CAP process, the JFMO should perform tasks to facilitate a smooth transition to the JSME. This is critical since the time constraints placed on the JTF may be minimal.

a. Table F-D-1 will assist the JFMO and/ or JSME, joint Service Theater Commands, and theater Service component commands in deliberate planning. Note these are only suggestions, since every combatant command and JTF plans are different; these tasks should be modified to fit the specific needs of the OPLANS, and the AOR as necessary.

Create Spectrum Management Manual (SMM)	
	To promulgate spectrum use policy, procedures, and guidelines.
Maintain library of equipment technical data	
	To develop spectrum-use plan.
Terrain Data	
DTED	To perform EW deconfliction and interference analysis.
ARDG	Aid in performing EW Deconfliction and Interference Analysis when DTED is unavailable. Also for mobile subscriber equipment network planning terminals.

Paper Products	Aid in EW deconfliction and interference analysis when DTED is unavailable.
BEI (EME combined with E3)	
HERO	Consider electromagnetic effects to ordnance when planning joint operations.
FRRS	Database of current assignments.
	Maintain current J/F-12 database
Standing Theater JRFL	Current listing of TABOO, PROTECTED, and GUARDED frequencies in the combatant commander's AOR.
Area Studies	To extract spectrum-use data in AOR.
ITU	To extract spectrum-use data in AOR.
Intelligence Sources	To extract spectrum-use data in AOR.
Review of OPLANs	
	Estimate of force structure.
	Estimate of spectrum-use requirements.
	To ensure spectrum use considerations are included. To ensure augmentation or support is included. Review for any UN, host-nation, or coalition force spectrum-use. To become familiar with previous deficiencies.
JULL	To become familiar with previous deficiencies.
Maintain Library	
Service-unique Manuals	Aid in spectrum-use planning.
UN, Coalition, Allied Forces Manuals	Aid in spectrum-use planning.
Joint Policy, Procedures, and Guidelines	Aid in spectrum-use planning.
Software Manuals	Aid in utilization or software.
FLIP	Aid in the EME study of AOR.
World Radio and TV Handbook and Satellite and TV Handbook	Aid in the EME study of AOR.
JCEOI Development	
Master Net List of All Possible Component Forces	Aid in JCEOI development.
Callword Dictionaries	Aid in JCEOI development.
Current Suffix and Expander Listing	Aid in JCEOI development.
Training Plan	
	To ensure quality of force.

Policy and Procedures	Familiarize and standardized procedures.
Combatant Command SMM	Familiarize and standardized procedures.
Service Unique Procedures	Familiarize and standardized procedures.
Joint Policy and Procedures	Familiarize and standardized procedures.
UN, Allied, and Coalition Force Policy	Familiarize and standardized procedures.
Spectrum Management Software	
Spectrum XXI	To perform spectrum management tasks.
RBECS	To perform spectrum management tasks.
FRRS	To perform spectrum management tasks.
Deployment Equipment	
	In sufficient quantity to support JSME.
Computer and Peripherals	To operate spectrum management.
Computer Communication Device(s)	To support connectivity with other spectrum management sites.
Printer	To support the display of information.

Table F-D-1. Deliberate Planning Checklist

3. Crisis Action Planning. Since each crisis is unique, it is not reasonable to expect to use a rigid set of rules in our response to every situation. CAP was put into effect in 1976 by the Joint Chiefs of Staff as a system for time-sensitive military planning. The result of these steps is the ability to develop an adequate and transportation-feasible military response during a time-constrained planning process. The procedures are categorized into six phases. Each phase of CAP begins with an event, such as the receipt of a report or order, and ends with a decision or resolution of the crisis (See Table F-D-2). The JFMO must accomplish all spectrum-related planning or tasks required until the JSME is established.

a. Situation Development. This phase is triggered by the occurrence of an event where there is a possible security implication for the United States or its interests. The event is recognized, analyzed, and reported. The JFMO and/ or JSME should be aware of the developing situation and determine the necessity to gather updated information and refresh knowledge on any plans that exist for the developing situation. Potential harmful electromagnetic radiation to ordnance (HERO) effects should be considered to prevent catastrophic detonation of munitions. (Munitions from one Service are not designed for operations across all environments.)

b. Crisis Assessment. In this phase, the combatant commander and Joint Chiefs of Staff analyze the situation to determine whether military options should be prepared to deal with the evolving problem. The JFMO

and/ or JSME should increase information gathering and review all available options. This phase ends with the decision of the President and/or Secretary of Defense to have military options developed.

c. Course of Action Development. During this phase, the combatant command is presented with all available options for action. The JFMO and/ or JSME, augmented by theater Service component spectrum managers, begins to develop the spectrum management concept for the possible JTF operation. The interaction between planning cells is critical to allow spectrum-related issues to be considered and provide the JFMO and/ or JSME staff a better understanding of the crisis situation. Phase is complete upon release of combatant commander's estimate of the COA.

d. Course of Action Selection. During this phase the combatant commander receives the COA brief, selects a COA, and forwards that decision to begin the execution planning. The force structure should be solidified and the JFMO and/ or JSME should begin finalization of the spectrum management concept.

e. Execution Planning. In this phase, the supported commander transforms the combatant commander-selected COA into an OPORD. In order to execute the approved COA, detailed planning is performed. The actual forces, sustainment, and strategic transportation resources are identified, and the concept of operations is described. This phase ends with the combatant commanders' decision to execute the OPORD, place it on hold, or cancel it pending resolution by some other means.

f. Execution. The Secretary of Defense will authorize the Chairman to issue an execute order that directs the combatant commander to carry out the OPORD. The combatant command then issues an executive order to subordinate and supporting commanders that directs the execution of their OPORDs.

CAP Phase 1: Crisis Action Planning	
	Review OPLANs and CONPLANs.
	Availability of data (DTED, ARDG, Area Study)
	Improve databases from those collected in deliberate planning specifically for AOR.
CAP Phase 2: Crisis Assessment	
	Gathers BEI from sources available.
	JFMO receives augmentation, as necessary.
CAP Phase 3: Course of Action Development	
	Interaction with other planning cells to consider spectrum-related issues in all planning.
	Develop understanding of crisis.
	Continue gathering AOR EME.
	Consider HERO when planning joint operations.
	J-5 establishes coordination channels, if needed.
	Develop initial spectrum management concept.
	Develop contact list, telephone, and FAX, SIPRNET.
	Host nation allocation tables, as needed.
	Maintain currency of all AOR assignments.
	Merge spectrum-use assumptions with current known force structure.
CAP Phase 4: Course of Action Selection	
	Finalize the spectrum management concept.
	Data call for spectrum-use and JCEOI inputs.
	Special spectrum-use requirements non-military (e.g. diplomatic, media, morale and welfare, etc.)
	Out of band requirements.

	Coordinate with UN, host-nation, and allies for spectrum-use.
	Finalize spectrum-use plan.
	JSME augmentation and support.
	EW requirements.
	Outside agency operational and planning support
CAP Phase 5: Execution Planning	
	Finalize spectrum management annex to OPORD.
	Participate in the IO cell.
	Compile and submit draft JRFL to the IO cell.
	Publish spectrum management annex.
CAP Phase 6: Execution	
	Assess the spectrum-use plan with the EME to define and analyze the EMB.
	Reuse and sharing plans established in congested bands (e.g. M225-400).
	JOPES input.
	Identify movement plans through TPFDD.
	Distribute allotment plans and assignments.
	Publish JCEOI and JRFL.

Table F-D-2. Crisis Action Planning Checklist

4. Execution Phases. During the execution of an OPORD, there are many phases and special considerations for each (See Table F-D-3).

a. Predeployment

(1) Communication. The JFMO and/ or JSME needs to ensure that communications are available to link all spectrum management functions together. Alternate means of communications should be considered to prevent isolation. A timeline needs to be established to transfer authority from the JFMO to the JSME when the JSME deploys forward. All units need to be aware of who is the assignment authority during that planned timeline.

(2) Distribution. The JFMO and/ or JSME should distribute the initial spectrum-use plan, JCEOI, JRFL, and spectrum management annex to communications appendix, the common EMB database, with updates to functional levels.

(3) Equipment and Personnel. Time needs to be allotted for all augmentees and support to receive personnel deployment checks, and to be briefed on the overall concept of the operation.

(4) Security. Information must be safeguarded during all phases, but especially during this phase due to the critical need for force protection and EEFI.

b. Deployment

(1) The deployment of a JTF involves the loading, transport, and assembly in the AOR of forces assigned to the JTF. Transport may be by air, land, or sea or a combination thereof. The JFMO and/ or JSME must have the information contained in the JOPES and TPFDD to determine the force structure and to know the embarkation and debarkation schedules of the JTF component forces in order to assign, allot, and coordinate the necessary spectrum-use authorizations.

(2) Spectrum-Use Plan. The spectrum-use plan actions taken during the deployment phase are continuations of related tasks begun during the planning phase of the operation. Additional frequency requests are reviewed, evaluated, and coordinated with host-nation frequency management personnel. Coordination procedures contained in reference i or those established by J-5 should remain in effect. Allotment plans should be reviewed to determine if any additional spectrum resources should be provided to a component. Allotment plans and assignments should periodically be evaluated as participating units or component requirements may significantly change during the different phases of the operation. The J-2, J-3, and J-6 should review the frequencies in the JRFL to identify any changes required as a result of a modification to the COA or a change in activity in the AOR. Appendix E to this enclosure provides a description of the data fields for the JRFL.

c. Employment Phase. Throughout the employment phase of a JTF, the JSME must constantly anticipate and support fluctuating spectrum-use requirements resulting from changes in the EMB.

(1) Resolving Spectrum Use Conflicts. The JSME analyzes requirements of intelligence, operations, EW, C4, etc., to identify

potential spectrum-use conflicts. When conflicts are identified or reported, the JSME works to resolve those conflicts, i.e., deconflict. Spectrum-use conflicts that cannot be resolved by the JSME will be referred to the IO cell. Those conflicts not resolved by the IO cell will be referred to the J-3.

(2) Deconfliction. Deconfliction may be accomplished by changing the frequency for one or more of the users; by changing the parameters used, e.g., reducing effective radiated power; by changing the antenna type or orientation; by time-sharing use of the frequency; or by increasing the separation distance between the equipment affected.

(3) Electromagnetic Interference Resolution. A significant amount of EMI can occur at the start of the employment phase when the JTF activates large numbers of spectrum-dependent equipment and when JTF spectrum-use is overlaid on the AOR EME. These and other EMI incidents should be resolved using the procedures in Appendix B.

d. Redeployment. This process includes the phased removal of forces from the AOR. This will free resources for hand-over to the provisional government, UN forces, etc. Assets must be redistributed and redefined as the role of forces changes from an operational mission to that of administrative and/or logistic one.

(1) Spectrum-Use. Requirements for use of the spectrum will continue throughout the redeployment phase until all participating forces have departed from the area of operations. Frequency requirements for combat forces will be reduced, while other requirements for services such as humanitarian support, civil affairs, and rear-area security will increase. Modifications to frequency-use plans may be required to reflect the changes in the composition, roles, and missions of the participating forces during this phase of the operation.

(2) Transfer of database information.

(a) The transfer of information between the component frequency-management offices and the JSME will continue to be required during the redeployment phase until a component ceases to participate in the operation and all necessary frequency-management actions are completed; for example, frequency assignments no longer required are canceled, their records are deleted from the database, unused frequency resources returned to host nation, etc. A copy of the frequency assignments and allotments existing at the termination of a component's or a JSME's participation should be archived for possible use in future exercises or contingencies.

(b) Spectrum management responsibility may be transferred between organizations during any phase of an operation. However, this transfer is more probable during the redeployment phase when the majority of the tasks may be assigned to a single component. The JSME must develop a transition plan as to when the spectrum management responsibility is to be transferred between organizations. The spectrum management responsibility must be transferred in an orderly manner and any changes in procedures, personnel, telephone numbers, etc., must be provided to the organizations affected.

(c) The JSME must develop special plans and procedures if the hardware used for automated tools is to be changed. The transfer of data should require only a few hours if the computers are electronically linked. However, this process can take significantly longer if the software programs and database information is to be loaded from disks. The JSME must assure availability of the proper hardware, software, procedures, and time required before the transfer of frequency management responsibility between organizations.

(3) If the JTF is to be dissolved, the responsibility for spectrum management will transfer from the JSME to the JFMO during or at the end of the redeployment phase. Until this transfer occurs, the responsibility for day-to-day spectrum management remains with the JSME.

Predeployment	
	Receive and review frequency request for completeness, accuracy, and compatibility.
	Develop transition plan from JFMO to operational JSME
	Identify communication to all JTF spectrum managers.
	Distribution of critical information.
	Readiness of personnel and equipment.
	Security of EEFI.
	Deploy to forward area.
	JSME operation and connectivity.
	EME, AOI, and AOR database updates.
Deployment	
	Receive and review frequency request for completeness, accuracy, and compatibility.
	Identify and transfer databases as necessary.

	Develop procedures for the transfer of databases.
Employment	
	Receive and review frequency request for completeness, accuracy, and compatibility.
	Ensure sufficient spectrum is assigned or allotted for all spectrum-dependent systems.
	Allot additional frequencies to components as identified, create needed reuse or sharing plans based on geographical separation or use.
	Coordinate use of spectrum resources with UN, host nations, and allies.
	Update JRFL.
	Coordinate with the IO cell on EW deconfliction.
	Identify and propose solution to IO spectrum-use conflicts.
	Attempts to resolve EMI and reports if necessary.
	Update spectrum-use information for J-3 inclusion in the JOPES.
	Develop transition plan back to the JFMO.
Redeployment	
	Receive and review frequency request for completeness, accuracy, and compatibility
	Identify updates and transfer databases.
	Satisfy requirements for intermediate staging bases, points of embarkation, etc., for smooth operation of redeploying units.

Table F-D-3. Operation Phases Checklist

ANNEX A TO APPENDIX D TO ENCLOSURE F

ALLOTMENT PLAN

1. An allotment plan identifies small bands or groups of frequencies within a specified spectrum-use plan for use by a specific organization or for a particular function. The use of an allotment plan enables the JFC to maintain overall control of spectrum use in the AOR, and at the same time decentralizes authority to the lowest level.
2. Allotment plans are normally developed for, but not limited to, HF (2-30 MHz), VHF (30-88 MHz and 118-174 MHz), and UHF (225-400 MHz) bands. The frequency allotments in each of these plans must be based upon a ratio of air, land, and sea forces for a particular operation or mission and an assessment of their spectrum requirements. Planners should consider spectrum-use restrictions when developing an allotment plan.
3. Planners obtain the spectrum-use requirements upon which the allotment plan is based from the combatant command; J-2, J-3, and J-6 staff elements and components; the JCEOI Net List; and any UN, allied, or coalition forces, if known. When developing an allotment plan, the developer must consider joint and/or multinational-force equipment capabilities; host-nation allocations and restrictions; radio frequency requirements for wide area assignments; jam-resistant equipment; navigational aids; wartime reserve mode; and equipment that requires specified frequencies.
4. JFMO and/ or JSME planners must evaluate all requirements in the allotment plan for electromagnetic compatibility and eliminate any potential conflicts. If not all of the requirements can be satisfied, the IO cell must attempt to resolve conflicts based upon operational priorities. The IO cell will refer the situation to the J-3 if it cannot resolve the conflict.
5. The following details the steps for creating an allotment plan.
 - a. Is there an existing channeling plan for the frequency band?
 - (1) Yes. Begin development of allotment plan at paragraph 4.

- (2) No. Begin development of allotment plan at paragraph 2.
 - b. Divide band into individual channels (uniform bandwidths or mixed).
 - c. Begin with all channels in the band as candidates.
 - d. Block known existing and/or denied frequency assignments:
 - (1) Allocated for other or special use, e.g. NAVAIDS (Instrument Landing System Glide-slope).
 - (2) US permanent frequency assignments in AOR.
 - (3) IFL listings in and within interference distance of AOR.
 - (4) Host nation and/or neutral nation frequency use.
 - (5) US, UN, and coalition forces' specific frequency requirements.
 - (a) Satellite frequencies.
 - (b) Fixed-frequency equipment.
 - (c) Special frequency complements, (e.g., spread-spectrum hop sets, etc.).
 - (d) Frequencies for JTF HQs and/or JCS-controlled assets.
 - (e) Other frequencies as required.
 - e. Identify US and coalition forces' spectrum-use requirements (Requirements should be presented in numbers of nets, circuits, etc., for translation into the number of frequencies required).
 - f. Analyze requirements for separation distances (minimum and maximum), channel size(s) and bandwidth(s) requirements.
 - g. Determine percentage requirements for coalition and component forces based upon requirements.
 - h. Allot remainder of available channels to participating forces based upon percentage of requirements.

i. An allotment plan is usually conveyed to the user in a simple format that contains a listing of the frequencies derived through the (process described above) and preceded by a paragraph specifying all restrictions applying to the allotted frequencies, e.g., transmitter power, authorized emission and bandwidth, geographical location, maximum transmitter altitude, function, etc.

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ANNEX B TO APPENDIX D TO ENCLOSURE F

JOINT NETS

The following is a list of COCOM and JTF nets that were extracted from reference i.

1. COCOM Nets

- a. COCOM 1. COCOM Command Net -- Secure UHF SATCOM voice net connecting the supported COCOM, CJTF, and selected subordinates.
- b. COCOM 1A. COCOM Command Net -- Secure HF-SSB voice net connecting the combatant command, CJTF, and selected subordinates.
- c. COCOM 1B. COCOM Command Net -- Secure SHF SATCOM data net connecting the supported combatant command and selected subordinates.
- d. COCOM 2. COCOM Mission Radio Net -- Nonsecure HF-SSB voice net supporting security assistance administrative matters.
- e. COCOM 3. Command Data Net -- Secure HF data net between supported combatant command and CJTF.
- f. COCOM 3A. Command Data Net -- Secure HF data net between supported combatant command and COMUSFOR (COUNTRY).
- g. COCOM 3B. Command Data Net -- Secure HF data net between supported and supporting combatant commands.
- h. COCOM 4. COCOM Special Intelligence Net -- Secure HF-SSB data net linking supported combatant command, CJTF, and selected special intelligence elements.
- i. COCOM 5. Special Intelligence Teletype Circuit -- Duplex 100 WPM secured teletype circuit between USJFCOM and COMUSFOR (COUNTRY). Circuit becomes operational upon activation of COMUSFOR (COUNTRY) in the objective area.

j. COCOM 5A. Special Intelligence Teletype Circuit -- Duplex 100 WPM secured teletype circuit between USJFCOM and CJTF-140 when forward deployed. Circuit is to become operational upon activation of CJTF-140 by US Commander, Atlantic Command.

k. COCOM 6. Tactical Missile Alerting Net -- Secure UHF SATCOM voice alert broadcast net to CJTF and in-theater forces. Established upon direction of CJTF.

2. JTF Nets

a. JTF 3. Embassy Emergency and Voice Command Net -- Nonsecure HF-SSB voice net between military commanders and AMEMB in the area of the crisis.

b. JTF 3A. Embassy Emergency and Voice Command Net -- Secure VHF-FM voice net between military commanders and AMEMB in the area of the crisis.

c. JTF 3B. Embassy Emergency and Data Command Net -- Secure HF-SSB Data net between military commanders and AMEMB in area of crisis.

d. JTF 5. Out-Of-Country Net -- Secure and Nonsecure UHF SATCOM voice net providing the CJTF and component headquarters with DSN access via a satellite ground entry station.

e. JTF 6. Noncombatant Evacuation Net -- Nonsecure HF-SSB voice net to link selected evacuation points and elements being evacuated.

f. JTF 6A. Noncombatant Evacuation Net -- Nonsecure HF-SSB voice net activated by CJTF or senior objective area commander to link selected evacuation points and elements being evacuated.

g. JTF 7. Joint Medical Regulation Net -- Nonsecure HF-SSB voice net linking CJTF-designated medical authorities.

h. JTF 7A. Joint Medical Regulation Net -- Nonsecure VHF-FM voice net linking CJTF-designated medical authorities.

i. JTF 8. JTF Objective Area Special Intelligence Net -- Secure HF-SSB data net linking supported combatant commander, CJTF, and selected special intelligence elements.

- j. JTF 8A. JTF Objective Area Special Intelligence Voice Tactical Satellite net -- Secure UHF SATCOM between CJTF and subordinate and supporting commanders.
- k. JTF 11. Joint Command Net -- Secure UHF SATCOM net for CJTF and components.
- l. JTF 11A. Joint Command Net -- Secure HF-SSB voice net (backup to JTF 11).
- m. JTF 12. Joint Administrative and Logistics Net -- Secure UHF SATCOM voice and FAX net connecting CJTF and subordinate forces to coordinate routing administrative and logistic requirements.
- n. JTF 12A. Joint Administrative and Logistics Net -- Secure HF-SSB voice (backup to JTF 12).
- o. JTF 17. Joint and Combined Search and Rescue (SAR) Net -- Nonsecure HF-SSB voice net linking SAR elements.
- p. JTF 17A. Joint and Combined SAR Net -- Nonsecure UHF voice net linking the SAR elements.
- q. JTF 17B. Joint and Combined SAR Net -- Nonsecure VHF-FM voice net. Links SAR elements.
- r. JTF 18. JTF Communications Engineering Net -- Secure HF-SSB voice net for coordination relating to communications systems operation.
- s. JTF 19. Joint Information Bureau Net -- Nonsecure HF-SSB operated in accordance with special instructions promulgated by the supported combatant command Joint Information Bureau.
- t. JTF 19A. Joint Information Bureau Net -- Nonsecure VHF-FM operated in accordance with special instructions promulgated by the supported combatant command Joint Information Bureau.
- u. JTF 23. JTF Objective Area Voice Command Net -- Secure VHF-FM voice command net linking JTF forward-deployed element in the objective area with designated subordinates.
- v. JTF 24. Medical Evacuation Net -- Nonsecure VHF-FM voice net linking JTF units for purpose of medical evacuation.

- w. JTF 24A. Medical Evacuation Net -- Secure UHF SATCOM data net between JTF field hospital and area of operation medical center.
- x. JTF 70. Commander Joint PSYOP Net -- Configuration to be promulgated when activation is required.
- y. JTF 75. Joint Counterintelligence Coordination Net -- Configuration to be promulgated when activation is required.
- z. JTF 81. Joint Supporting Arms Coordination Net -- Secure HF-SSB voice nets for component forces to coordinate with CJTF concerning supporting arms for fire that impact outside of the task force areas of operation.
 - aa. JTF 81A. Joint Supporting Arms Coordination Net -- Secure VHF-FM voice nets for component forces to coordinate with CJTF concerning supporting arms for fire that impact outside of task force areas of operation.
 - bb. JTF 82. Naval Fire Control -- Secure or Nonsecure HF-SSB voice net used to pass mission status and relief reports from the firing ships to CTF ____SACC.
 - cc. JTF 83. Naval Fire Support Net -- Secure HF-SSB voice net supporting requests for fire, ship assignments, and orders pertinent to execution of fires.
 - dd. JTF 84. Naval Fire Ground Spot Net -- Secure HF-SSB voice nets between shore fire control party (SFCP) and assigned direct support gunfire ships.
 - ee. JTF 84A. Naval Fire Ground Spot Net -- Secure VHF-FM voice nets between SFCP and assigned direct support gunfire ship.
 - ff. JTF 85. Joint Link-up Net -- Secure VHF-FM voice net to coordinate rendezvous of separate elements or the rejoining of detached elements to parent organizations (multiple discrete frequencies).
 - gg. JTF 86. Naval Fire Ground Spot (Expansion Net) -- Secure or Nonsecure net to call for and adjust fire for units of TF ____.Assignments of SFCP Spot net to the firing ship and Support Fire Control Spot team will be made on JTF-82 by CTF ____SACC.

hh. JTF 87. Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF____. Assignments of SFCP Spot net to the firing ship and SFCP Spot team will be made on JTF-82 by CTF____SACC.

ii. JTF 88. Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF____. Assignment of SFCP Spot net to the firing ship and SFCP Spot team will be made on JTF-82 by CTF____SACC.

jj. JTF 89. Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF____. Assignment of SFCP Spot net to the firing ship and SFCP Spot team will be made on JTF-82 by CTF____SACC.

kk. JTF 90. Naval Fire Ground Spot (Expansion Net) -- Secure or nonsecure net to call for and adjust fire for units of TF____. Assignment of SFCP Spot net to the firing ship and SFCP Spot team will be made on JTF-82 by CTF____SACC.

ll. JTF 91. Combined Forces Link-up Net -- Nonsecure VHF-FM voice net to coordinate rendezvous of separate elements or the rejoining of detached elements to parent organizations (multiple discrete frequencies).

mm. JTF 93A. NF Airspot Control -- Secure or nonsecure UHF voice net used by airborne spotter to call and adjust fire. Assignment of this net to an air spotter will be made over the Tactical Air Observation Net. Assignment of this net to the firing ships will be made on JTF 83, "Naval Fire Support." Only one fire mission at a time, per net, will be conducted.

nn. JTF 93B. NF Airspot Control -- Secure or nonsecure UHF voice net used by airborne spotter to call and adjust fire. Assignment of this net to an air spotter will be made over the Tactical Air Observation Net. Assignment of this net to the firing ships will be made on JTF 83, "Naval Fire Support." Only one fire mission at a time, per net, will be conducted.

oo. JTF-XXX. JTF Net Expansion -- JTF expansion capability for additional net designators as determined by the applicable combatant command or CJTF.

3. Air Coordination Nets

- a. AC 1. Joint Air Coordination Net -- Secure UHF voice net via tactical satellite linking military air control agencies for coordination of air operations within and adjacent to the objective area.
- b. AC 1A. Joint Air Coordination Net -- Secure HF-SSB voice net backup to UHF satellite net. Links military air control agencies for coordination of air operations within and adjacent to the objective area.
- c. AC 2. Civil Air Control Common -- Nonsecure VHF-AM voice net designated by the Federal Aviation Administration or Civil Air Route Traffic Control Center to be used by Air Force Air Traffic control functions at CTF _____ CRCs and/or CRPs for control of civil aircraft movement in and through tactical airspace.
- d. AC 3. Tactical Air Traffic Control Net -- Nonsecure UHF voice net guarded by air control agencies of Navy and Marine tactical air control system (TACS) for initial report by tactical aircraft in support of CTF____ units. Also used by administrative and transient aircraft to establish contact with the applicable control agency. Circuit may also be used by Air Force forces (AFFOR) elements for TACS and COMMON initial reporting net.
- e. AC 3A. Tactical Air Traffic Control Net -- Nonsecure UHF voice net guarded by all Air Force radar facilities for initial reports by tactical aircraft in support of AFFOR CRCs and/or CRPs for control of civil aircraft movement in and through tactical airspace.
- f. AC 4. Tactical Air Direction Net -- Secure UHF voice net provides for direction of aircraft in the conduct of a close air support mission (multiple discrete frequencies).
- g. AC 5. Fighter Air Direction, Combat Air Patrol, and Air Defense Net -- Nonsecure UHF voice net supporting aircraft mission briefs and control of combat air patrol aircraft performing air defense alert, fighter escort, and/or threat intercept missions.
- h. AC 8. In-flight Report -- Nonsecure UHF voice linking tactical air control systems and aircraft.
- i. AC 9. UHF Airborne Relay -- Secure or nonsecure UHF used to provide and extend point-to-point UHF voice communications between ground and surface elements.

- j. AC 9A. UHF Airborne Relay – Secure or nonsecure UHF used to provide and extend point-to-point UHF datalink communications between ground and surface elements.
- k. AC 10. Joint Air Support Coordination Net -- Secure HF-SSB voice net used to coordinate immediate air support.
- l. AC 10A. Joint Air Support Coordination Net -- Secure VHF-FM voice net to coordinate immediate air support.
- m. AC 11. Link 11 -- Secure HF netted TADIL A datalink.
- n. AC 11A. Link 11 -- Secure UHF netted TADIL A datalink.
- o. AC 12. Link 14 -- Secure HF-SSB receive-only broadcast providing air movement data.
- p. AC 13. TADIL B -- Normally, a secure or nonsecure full duplex, HF, point-to-point link that operates with continuous transmissions in both directions, utilizing serial transmission frame characteristics.
- q. AC 14. Interface Coordination Net -- Secure HF-SSB voice dual-function net (tactical weapon employment coordination and digital message and interface control).
- r. AC 15. Track Supervision Net (TSN) -- Secure or nonsecure HF-SSB voice primary, assisting units entering and exiting the interface.
- s. AC 15A. TSN -- Secure or nonsecure UHF voice backup, assisting units entering and exiting the interface.
- t. AC 16. Datalink Coordination Net (DCN) -- Secure or nonsecure HF-SSB voice primary used to coordinate equipment supporting TADIL operations.
- u. AC 16A. DCN -- Secure or nonsecure UHF voice backup used to coordinate equipment supporting TADIL operations.
- v. AC 17. Voice Product Net (VPN) -- Secure UHF voice net used to forward non-digital SIGINT information to other interface subscribers.
- w. AC 17A. Special Information Systems/VPN -- VINSON-Secure UHF voice net used to forward non-digital special intelligence and SIGINT information to other interface subscribers.

x. AC 18. Tactical Air Request Net -- Secure HF-SSB voice net used to request immediate air support from air control agencies.

y. AC 19. Fighter Check-In Net -- Secure or nonsecure UHF voice net used to direct joint fighter type aircraft missions.

z. AC 19A. Fighter Air Direction Net -- Nonsecure UHF voice net used to direct joint fighter type aircraft missions.

aa. AC 20. Air Traffic Control -- Nonsecure UHF voice used for air traffic control services.

bb. AC 20A. Air Traffic Control -- Nonsecure VHF-AM voice used for air traffic control services.

cc. AC 23. Tanker, Refueling, and Rendezvous Operations -- Nonsecure UHF or VHF-AM voice nets for control of rendezvous and tanker and/or tactical aircraft in-flight refueling operations (multiple discrete frequencies).

dd. AC 24. HELO Direction Net -- Nonsecure UHF voice net used to control HELO assets in the JTF operating area.

ee. AC 25. HELO Command Net -- Secure UHF voice net linking the tactical air control center with the Naval HELO support units.

ANNEX C TO APPENDIX D TO ENCLOSURE F

SAMPLE SPECTRUM MANAGEMENT APPENDIX

Following is a **sample Appendix 4** to Annex K for JTF “X” operation plan. The JFMO and/ or JSME, depending on the flow of the situation, could construct this appendix. Change “JFMO and/ or JSME.” to reflect issuing office as required.

APPENDIX 4 JOINT SPECTRUM MANAGEMENT TO ANNEX K
COMMUNICATIONS TO “XXX”

1. (U) REFERENCES

- a. Theater Spectrum Management Manual/Regulation/Instruction
- b. CJCSI 3320.01, “Electromagnetic Spectrum Use in Joint Military Operations (U)”
- c. COCOM Directive 00-01, “Joint Task Force Headquarters and Standing Operating Procedures (JTF HQ SOP).(U)”

2. (U) GENERAL. This appendix provides guidance and direction for managing the spectrum to support operation JTF “X”. In order to most efficiently manage the spectrum for the number of users within the AOR and make assignments to these forces, assignment authority will be centralized. The JFMO and/ or JSME will coordinate all requests from the forces with the nation “X” and allies. Component spectrum managers will submit requests for frequencies, in SFAF, to the JFMO and/ or JSME, and will be responsible for assignment and allotment of all spectrum assets once approved.

3. (U) CONCEPT OF SUPPORT

a. (U) All Phases. Spectrum managers of the major components operating under JTF “X” will consolidate requests from subordinate units and forward these requirements to the JFMO and/ or JSME..

b. (U) Automation. The automated system used for database management will be Spectrum XXI. The JCEOI will be developed using RBECS for JCEOI generation. Transmission of frequency requests and

assignments will be electronic mail; AUTODIN/DMS message, SIPRNET, FRRS account, PC-to-PC transfer or via diskette.

4. (U) RESPONSIBILITIES

a. (U) JFMO and/ or JSME

(1) (U) Establish JTF command policy on the use and management of the spectrum.

(2) (U) In accordance with J-5 guidance, coordinate spectrum use with the host-nation and allied spectrum management authorities.

(3) (U) Serve as the senior frequency assignment coordination authority for subordinate task force units, and develop and distribute spectrum-use plans.

(4) (U) Provide representation to the IO cell.

(5) (U) Combine inputs from all JTF staff levels and components and develop a proposed JRFL for J-3 approval.

(6) (U) Maintain and publish J-3-approved JRFL.

(7) (U) In conjunction with J-6, and in coordination with the J-3, develop, publish, promulgate, and maintain the JCEOI.

(8) (U) Provide administrative and technical support for spectrum use.

(9) (U) Maintain the common database for planning, coordinating, and controlling spectrum use.

(10) (U) Implement JSIR procedures IAW CJCSI 3220.02.

(11) (U) Evaluate, analyze, and attempt to resolve interference incidents at the lowest level possible.

b. (U) JTF J-3

(1) (U) Establish net structure for developing into the JCEOI. Provide inputs to the JFMO and/ or JSME.

(2) (U) Approve JRFL for publication and dissemination.

(3) (U) Resolve spectrum-use conflicts between user IAW commander's priorities (e.g., J-2 requirement to exploit vice J-6 requirement to communicate).

(4) (U) Provide frequency-input list to the IO cell for inclusion into the JRFL.

c. (U) JTF J-2

(1) (U) Provide GUARDED frequency list to the IO cell for inclusion into the JRFL.

(2) (U) Assist in the resolution of interference incidents.

d. (U) Component Commands

(1) (U) Submit spectrum requirements in SFAF format to JSME. Nominate specific frequencies to be coordinated with nation "X". If coordination with nation "X" is required, each proposal must contain a Releasability code in SFAF item 005.

(2) (U) Ensure users comply with their frequency assignment parameters (power, bandwidth, and location).

(3) (U) Attempt to resolve any frequency conflicts and interference incidents locally. If resolution cannot be accomplished, report to JSME for resolution.

(4) (U) Provide frequency list to the IO cell for inclusion into the JRFL.

e. (U) Deploying Units

(1) (U) Submit frequency requests in SFAF format through higher headquarters to JFMO and/ or JSME.

(2) (U) Ensure only those frequencies assigned are used and comply with parameters of the assignment, e.g., power bandwidth and location.

(3) (U) Attempt to resolve any frequency conflict and interference incidents locally. If unable to resolve situation, report it IAW CJCSI 3220.02, "Joint Spectrum Interference Resolution."

5. (U) FORMAT. All frequency requests submitted will comply with SFAF as prescribed in Headquarters United States European Command Spectrum Management Manual. Preferably in electronic format: E-mail, AUTODIN/DMS, or on floppy disk. Each frequency request must be a complete stand-alone record, not an abbreviated or parted proposal (e.g., "part I of IV," "part three same as part one except," etc.).

6. (U) SECURITY CLASSIFICATION

a. (U) Frequency requests will be classified at the lowest level possible. If classified, each SFAF item will have a classification marking (U, C, or S) before the text.

b. (U) Any request that requires submission through the host nation will address releasability to host nation. (For example: Confidential, Releasable to Host-Nation as Confidential.)

(1) (U) TAB A: EMI Reporting

(2) (U) TAB B: JTF JCEOI Concept

(3) (U) TAB C: Spectrum-Use Planning

TAB A, "ELECTROMAGNETIC INTERFERENCE (EMI) REPORTING," TO
APPENDIX 4, "SPECTRUM MANAGEMENT." TO ANNEX K,
"COMMUNICATIONS TO 'XXX'"

1. (U) REFERENCES

a. (U) Theater Spectrum Management
Manual/Regulation/Instruction

b. (U) CJCSI 3320.02A, "Joint Spectrum Interference Resolution"

c. (U) COCOM Directive 00-01, "Joint Task Force Headquarters and
Standing Operating Procedures (JTF HQ SOP)"

2. (U) GENERAL. This Tab to Appendix 4 provides guidance and
direction for reporting interference incidents encountered during
Operation JTF "X".

3. (U) PROCEDURES

a. (U) Interference incidents will be reported using the enclosed
format. All reports of suspected hostile interference would be submitted
via secure means.

b. (U) The operator or user experiencing the interference is
responsible for submitting the interference report. All interference
reports submitted during this JTF operation will be coordinated through
the component IO office before transmission.

c. (U) Attempt to resolve interference problems at the lowest levels
possible before submitting JSIR reports to higher headquarters.

d. (U) Definitions

(1) (U) Meaconing. A system of receiving radio beacon signals
and intentionally re-broadcasting them on the same frequency to confuse
navigation.

(2) (U) Intrusion. The intentional insertion of electromagnetic
energy into transmission paths in any manner with the objective of
deceiving operators or causing confusion.

(3) (U) Jamming. The deliberate radiation, re-radiation or reflection of electromagnetic energy to disrupt use of electronic devices, equipment, or systems.

(4) (U) Interference. The unintentional disruption of use of electronic devices, equipment, or systems.

e. (U) Interference reports are submitted at a minimum to the following addresses depending on type of report:

(1) (U) For Hostile Interference

ACTION: JSME
COMBATANT COMMAND JFMO
JIOC SAN ANTONIO TX//OWS//
INFO: NSACSS FT GEORGE G MEADE MD//W9M//
DIA WASHINGTON DC//PGI-3A//
OTHER COMPONENT COMMANDS
THEATER COMBATANT COMMAND

(2) (U) Interference Involving Space Systems

ACTION: JSME
COMBATANT COMMAND JFMO
CMOC/SCC CHEYENNE MOUNTAIN AFS CO//SCC//
INFO: JSC ANNAPOLIS MD//OP/JSIR//
DISA ARLINGTON VA//DITF/UTTF// **(Only for DSCS systems)**
DISA WASHINGTON DC//333//
OTHER COMPONENT COMMANDS
THEATER COMBATANT COMMAND

(3) (U) Non-hostile Interference

ACTION: COMBATANT COMMAND JFMO/JSME
INFO: JSC ANNAPOLIS MD//OP/JSIR//
OTHER COMPONENT COMMANDS
THEATER COMBATANT COMMAND

f. (U) Reporting Format. To the maximum extent possible, the JSIR generation capability in Spectrum XXI will be used. If it is not available, then submit the following as minimum.

- (1) (U) Organization affected by EMI. Point of contact (POC) information (Name and telephone number). Make sure when listing a POC that individual is familiar with the problem.
- (2) (U) Place name, latitude, and longitude where EMI occurred.
- (3) (U) Times, dates, and periods when EMI occurred. Indicate whether the duration of the interference is continuous or intermittent, the approximate repetition rate of interference, and whether the amplitude of the interference is varying or constant. Indicate if the interference is occurring at a regular or irregular time of day.
- (4) (U) Systems and equipment affected by the EMI. Affected system function, name, nomenclature, manufacturer with model number, or other system description.
- (5) (U) Allocated frequency band or authorized frequency of equipment affected.
- (6) (U) Station and/or equipment causing the interference and the location or call sign, if known.
- (7) (U) Allocated frequency band or authorized frequency of the station and/or equipment causing the interference, if known.
- (8) (U) Probable cause of interference (for example, co-channel assignment, harmonics, inter-modulation, spurious products, jamming, etc.).
- (9) (U) Extent of impairment to operational capability of affected equipment. Characteristics of interference (reduced range, false targets, reduced intelligibility, data errors, etc.).
- (10) (U) Corrective measures taken to resolve or work around the interference.
- (11) (U) Effect of corrective measures.
- (12) (U) Any additional useful remarks. Provide a clear, unstructured narrative summary on the interference and local actions that have been taken to resolve the problem.

TAB B, "JTF JCEOI CONCEPT," TO APPENDIX 4, "SPECTRUM
MANAGEMENT," TO ANNEX K, "COMMUNICATIONS TO JTF 'X'"

1. (U) REFERENCE. JCS 182218ZOCT93
2. (U) GENERAL. This tab provides information concerning the JCEOI concept and its use during JTF "X".
3. (U) PROCEDURES
 - a. (U) The RBECS version 2.X will be used during JTF "X" operations, along with RBECS Merge for Windows 2.X, to create, modify, and generate the JCEOI.
 - b. (U) The JCEOI is a single, comprehensive document that contains frequencies, nets, SINCGARS information, and call signs and words for all participants. To provide adequate lead-time for submission of frequency requirements for allied coordination and to design, publish, and distribute the JCEOI, the following relationships and milestones are established:
 - (1) (U) Submit all JCEOI data through component headquarters for consolidation and forwarding to the JTF "X" JSME for inclusion in JCEOI.
 - (2) (U) Inputs are required from ARFOR, NAVFOR, AFFOR, MARFOR, JSOTF, and coalition forces component headquarters.
 - c. (U) The desired input method for JTF JCEOI inputs are electronic RBECS format; however, as a minimum, a paper copy of the Master Net List, Net Groups, Separation Plans are required. Coalition forces will submit and coordinate all requirements directly to the JSME for assistance in completing RBECS input.
 - d. (U) To create the JCEOI the following information is required.
 - (1) (U) Identify radio nets which have a specific title; e.g., alternate (ALT), anti-jam, or conduct of fire (COF). Radio net titles may contain a maximum of 16 characters including spaces; e.g., 29TH INF DIV ALT. Also, identify the frequency band that radio net will operate in; e.g., HF, VHF-FM, VHF-AM, UHF, SHF, or EHF.
 - (2) (U) Identify radio nets requiring a fixed frequency.

- (3) (U) Identify nets that require frequency separation.
- (4) (U) Identify nets that can be included in a share plan.
- (5) (U) Satellite net names will appear in the JCEOI but may not have frequencies due to time constraints and availability of channels.
- (6) (U) HF DCS entry frequencies.
- (7) (U) Frequencies to be included in the JRFL must be identified before final generation of JCEOI.
- (8) (U) Nets requiring restriction codes and the restriction code definitions.
 - g. (U) List of all nets requiring a call sign to build the call sign vocabulary. Daily changing alphanumeric, tri-graph (letter-number-letter) call signs will be used; e.g. B3K, C9Q. The capability to provide fixed tri-graph call signs is not available.
 - h. (U) Identify all net groups to ensure their listing in the appropriate component layer of the JCEOI.
 - i. (U) Lists of unit net names. These names can contain a maximum of 16 characters including spaces, (e.g., 9th MAR TOW PLT). Net names cannot be used more than once within a component; net names must be unique.
 - j. (U) List of all nets requiring a call word in order to build the call word vocabulary includes fixed and daily changing call words. The JSME will deconflict the call word dictionary against any fixed call words that are requested.
 - k. (U) List of the suffixes that each component will use. The suffix is a two-digit number attached to a call sign or call word used to identify personnel or staff sections within a unit. The suffix vocabulary may contain a maximum of 99 assignments. There will be one master changing suffix vocabulary for the JCEOI.
 - l. (U) List of expander titles that the unit will use. The expander is a single letter assignment used to identify personnel within a unit. Expander vocabulary can contain a maximum of 20 expander titles. There will be one master changing expander vocabulary for the JCEOI.

- m. (U) Instructions for the use of changing suffixes and/or expanders are provided in the Quick Reference pages of the JCEOI.
- n. (U) The JCEOI when completed will be transmitted electronically to all component commanders. Methods of transmission can include: SIPRNET E-mail, compressed file transfer over STU-III, or download from JTF "X" web server. Coalition forces will be given paper copies.
- o. (U) The JTF JCEOI will be in half-page 52-line format. The JCEOI will be generated in three (3) editions; one active edition, one reserve edition transmitted to, but not distributed below component headquarters, and a third edition to be used in case of a compromise.

TAB C, "JOINT SPECTRUM-USE PLAN." TO APPENDIX 4, "SPECTRUM MANAGEMENT," TO ANNEX K, "COMMUNICATIONS TO JTF 'X'"

1. (U) REFERENCES

a. (U) Unified command regulation or Spectrum Management Manual.

b. (U) Unified command Joint Communications-Electronics Standing Instructions.

c. (U) Other applicable directives or instructions, as appropriate.

2. (U) GENERAL. This Tab describes spectrum-use plan for operation JTF "X".

3. (U) PROCEDURES

a. Spectrum-Use PLAN. Subject to any limitations noted (such as power, bandwidth, hours of operation, etc.), list the frequencies authorized for use in the exercise or operation. Sort frequency authorizations according to frequency band to facilitate reference and use. The JCEOI frequency authorization information is also included in the JTF Frequency Plan. Present each sort list as a TAB to this appendix (Tab E and F). Use Table F-D-C-1 below as an example.

Freq. Band	Intended Use by Military Forces	Military Requirements	Conditions of Use
(a)	(b)	(c)	(d)
14-70 kHz	MARITIME MOBILE	Essential military requirement for naval communications.	
415 - 526.5 kHz	AERONAUTICAL RADIONAVIGATION	Military requirements for tactical non-directional beacons.	
	MARITIME MOBILE	Military requirements for naval communications	
156 - 174 MHz	MOBILE, except Aeronautical Mobile	Military requirements for Sonobuoy operations at sea and in port.	Sonobuoy to be operated on a secondary basis.

	MARITIME MOBILE	Military requirements for naval communications.	To be used in accordance with RR Appendix 18.
420 – 450 MHz	RADIOLOCATION Radiolocation	Military requirements for land and naval radar and airborne radar over ocean areas.	In the interference range of the territorial waters of member's countries, radar operations must be coordinated on a national basis according to the status of the services.
4400 – 5000MHz	FIXED, MOBILE	Essential military requirements for fixed, tactical radio relay and mobile systems.	1.This is a harmonized NATO band type1. 2.This FIXED SATELLITE service will not be implemented in NATO Europe.

Table F-D-C-1. JTF Frequency Plan

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ANNEX D TO APPENDIX D TO ENCLOSURE F

COMBATANT COMMAND POINTS OF CONTACT AND AREAS OF
RESPONSIBILITIES

1. The following table provides POC information for the COCOM
frequency management offices.

COMMAND	TELEPHONE NO.	MESSAGE ADDRESS
USCENTCOM	COMM (813) 827-5366 DSN 299-6597 FAX (UNCLAS info) DSN 299-6659 FAX (SECURE info) DSN 299-5279	USCINCCENT MACDILL AFB FL//CCJ6-COF//
USEUCOM	COMM 49-711-680-8523 DSN (314) 430-8523 FAX (UNCLAS) DSN 314-430-5006 FAX(SECURE) Call for info	HQUSEUCOM VAIHINGEN GE//ECJ6-F/JFMO//
USSOCOM	COMM (813) 828-4855 DSN 299-4855, 299-4855 FAX (UNCLAS info) DSN 299-3279 FAX (SECURE), 299-8636	USSOCOM MACDILL AFB FL//SOIO-CO//
USJFCOM	COMM (757) 444-3241 DSN 564-3241 FAX (UNCLAS) DSN 565-9267 FAX (SECURE info) DSN 836-5112	JFMO LANT NORFOLK VA//
USPACOM	COMM (808) 477-1051/2/4 DSN (STU III) (315) 477-1051/2/4 FAX (UNCLAS) (808) 477-0691 FAX (SECURE) (808) 477-1048	JFMO PAC HONOLULU HI//J61//
USSOUTHCOM	COMM (305) 437-1661 DSN 567-1661 FAX (UNCLAS) X-1951 FAX (SECURE) X-1875	USSOCOM MIAMI FL//SCJ632//

Table F-D-D-1. Combatant Command's JFMO POC Information

2. Figure F-D-D-1 and Table F-D-D-2 are a representation of the COCOM AORs and a country listing for each AOR.

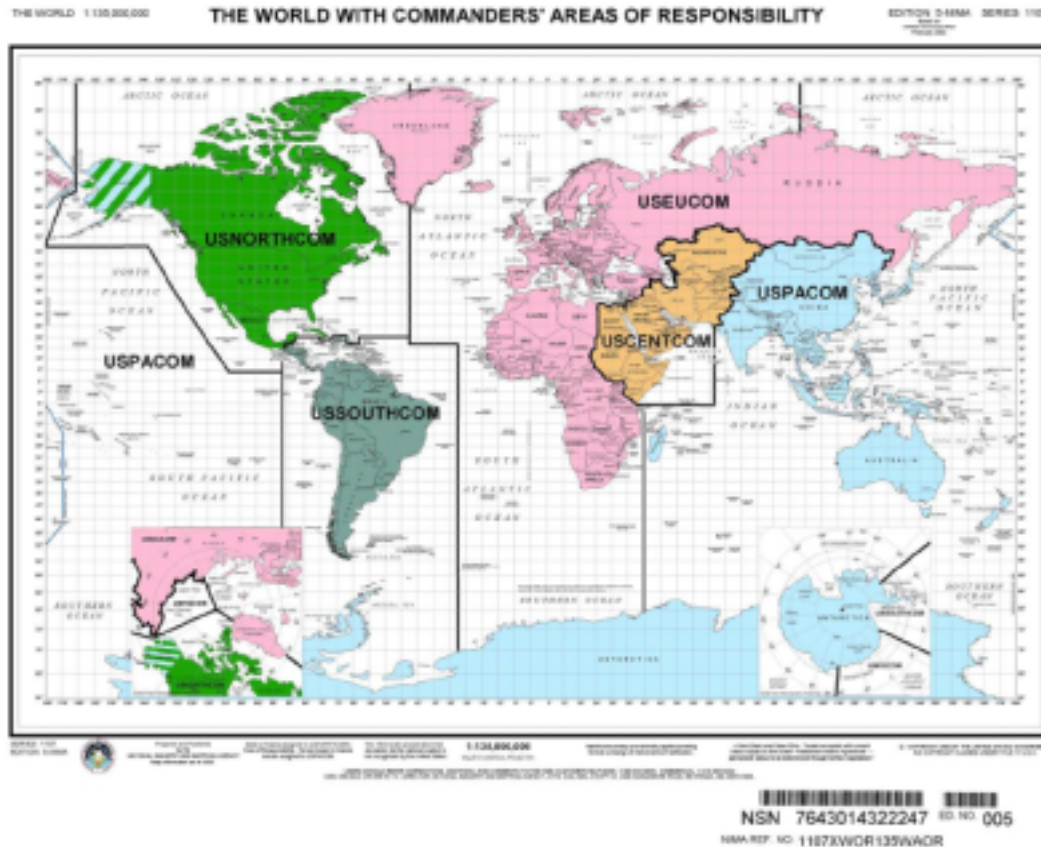


Figure F-D-D-1. Combatant Commanders' Areas of Responsibility

ITU CODE	COUNTRY
ASC	Ascension Island
AZR	Azores
GRL	Greenland
ISL	Iceland
MDR	Madeira
SHN	Saint Helena
SPM	Saint Pierre and Miquelon (French Department of)
STP	Sao Tome and Principe (Democratic Republic of)
USA	The 48 contiguous States of the United States of America
TRC	Tristan da Cunha

Table F-D-D-2. County listing for USJFCOM

ITU CODE	COUNTRY
ALS	Alaska
AUS	Australia
BGD	Bangladesh (People's Republic of)
ICO	Cocos Keeling Islands
COM	Comoros (Islamic Federal Republic of the)
CRO	Crozet Archipelago
DGA	Diego Garcia
FJI	Fiji (Republic of)
GUM	Guam
HWA	Hawaii
HKG	Hong Kong
IND	India (Republic of)
INS	Indonesia (Republic of)
J	Japan
JAR	Jarvis Island
JON	Johnston Island
FSM	Micronesia (Federated States of)
AMS	St Paul & Amsterdam Is. and Andorra (Principality of)
GCC	Territories of the United Kingdom in Region 3
KER	Kerguelen Islands
KIR	Kiribati (Republic of)
KOR	Korea (Republic of)
KRE	Korea, Democratic People's Republic of
LAO	Lao, People's Democratic Republic
MAC	Macao
MAU	Mauritius (Republic of)
MDG	Madagascar (Democratic Republic of)
MDW	Midway Islands
MHL	Marshall Islands (Republic of the)
MLA	Malaysia
MLD	Maldives (Republic of)
MRA	Mariana Islands (except Guam)
MRL	Marshall Islands
MRN	Marion Island
MSR	Montserrat
MYT	Mayotte Island
NCL	New Caledonia
NFK	Norfolk Island
NIU	Niue Island
NPL	Nepal
NRU	Nauru (Republic of)

NZL	New Zealand
OCE	French Polynesia
PAQ	Easter Island (Chile)
PHL	Philippines (Republic of the)
PHX	Phoenix Islands
PLM	Palmyra Island (some 50 islands make up the Atoll of Palmyra)
PLW	Palau (Republic of)
PNG	Papua New Guinea
PTC	Pitcairn Island
REU	Reunion (French Department of)
ROD	Rodriguez
SEY	Seychelles (Republic of)
SLM	Solomon Islands
SMA	American Samoa
SMO	Western Samoa (Independent State of)
SNG	Singapore (Republic of)
SWN	Swan Islands
TCA	Turks and Caicos Islands
THA	Thailand
TKL	Tokelau Islands
TMP	East Timor Columbia
TUV	Tuvalu
VTN	Viet Nam (Socialist Republic of)
VUT	Vanuatu (Republic of)
WAK	Wake Island
WAL	Wallis and Futuna Islands

Table F-D-D-3. Country list for USPACOM

ITU CODE	COUNTRY
AFS	South Africa (Republic of)
ALB	Albania
ALG	Algeria (People's Democratic Republic of)
AGL	Angola (Republic of)
AND	Andorra
AOE	Western Sahara
ARM	Armenia
AUT	Austria
AZE	Azerbaijan
BEL	Belgium
BEN	Benin (Republic of)
BIH	Bosnia and Herzegovina (Republic of)
BLR	Belarus
BOT	Botswana
BUL	Bulgaria
BFA	Burkina Faso
BDI	Burundi (Republic of)
CAF	Central African Republic
CME	Cameroon (Republic of)
CYP	Cyprus
TCD	Chad (Republic of)
COG	Congo (Republic of the)
CTI	Cote d'Ivoire (Republic of) (Ivory Coast)
CZE	Czech Republic
D	Germany (Federal Republic of)
DNK	Denmark
DOM	Dominican Republic
GNE	Equatorial Guinea (Republic of)
HOL	Netherlands
HRV	Croatia (Republic of)
ESP	Spain
EST	Estonia (Republic of)
FIN	Finland
F	France
G	United Kingdom of Great Britain and Northern Ireland
GAB	Gabonese Republic
GMB	Gambia (Republic of the)
GHA	Ghana
GNB	Guinea-Bissau (Republic of)
GRC	Greece

GUI	Guinea (Republic of)
HNG	Hungary (Republic of)
HOL	Netherlands (Kingdom of the)
I	Italy
IRL	Ireland
ISR	Israel (State of)
LIE	Liechtenstein
LVA	Latvia (Republic of)
LBN	Lebanon
LSO	Lesotho (Kingdom of)
LBR	Liberia (Republic of)
LBY	Libya (Socialist People's Libyan Arab Jamahiriya)
LTU	Lithuania (Republic of)
LUX	Luxembourg
MCO	Monaco
MDA	Moldova
MKD	The Former Yugoslav Republic of Macedonia
MLI	Mali (Republic of) (only)
MLT	Malta
MOZ	Mozambique (Republic of)
MRC	Morocco (Kingdom of)
MTN	Mauritania (Islamic Republic of)
MWI	Malawi
NGR	Niger (Republic of the)
NIG	Nigeria (Federal Republic of)
NMB	Namibia (Republic of)
NOR	Norway
POL	Poland (Republic of)
POR	Portugal
ROU	Romania
RRW	Rwandese Republic
S	Sweden
SEB	Serbia
SEN	Senegal (Republic of)
SRL	Sierra Leone
SUI	Switzerland (Confederation of)
SVK	Slovak Republic
SVN	Slovenia (Republic of)
SWZ	Swaziland (Kingdom of)
SYR	Syrian Arab Republic
TGO	Togolese Republic
TZA	Tanzania (United Republic of)
TUN	Tunisia

TUR	Turkey
UGA	Uganda (Republic of)
UKR	Ukraine
ZAI	Zaire (Republic of)
ZAN	Tanzania (Zanzibar)
ZMB	Zambia (Republic of)
ZWE	Zimbabwe (Republic of)

Table F-D-D-4. Country list for USEUCOM

ITU CODE	COUNTRY
AFG	Afghanistan
ARS	Saudi Arabia (Kingdom of)
BHR	Bahrain (State of)
DJI	Djibouti (Republic of)
EGY	Egypt (Arab Republic of)
ERI	Eritrea
ETH	Ethiopia
IRN	Iran (Islamic Republic of)
IRQ	Iraq (Republic of)
JOR	Jordan (Hashemite Kingdom of)
KAZ	Kazakhstan
KEN	Kenya (Republic of)
KGZ	Kyrgystan
KWT	Kuwait (State of)
OMA	Oman (Sultanate of)
PAK	Pakistan (Islamic Republic of)
QAT	Qatar
SEY	Seychelles
SOM	Somali Democratic Republic
SDN	Sudan (Republic of the)
TJK	Tajikistan
TKM	Turkmenistan
UAE	United Arab Emirates
UZB	Uzbekistan
YEM	Yemen

Table F-D-D-5. Country list for USCENTCOM

ITU CODE	COUNTRY
ATG	Antigua and Barbuda
ARG	Argentine Republic
ABW	Aruba
BAH	Bahamas (Commonwealth of the)
BLZ	Belize
BER	Bermuda
B	Brazil (Federative Republic of)
VRG	British Virgin Islands
CNR	Canary Islands
CYM	Cayman Islands
CTR	Costa Rica
CUB	Cuba
DMA	Dominica (Commonwealth of)
EQA	Ecuador
SLV	El Salvador (Republic of)
FLK	Falkland Islands (Malvinas)
GRD	Grenada
GDL	Guadeloupe (French Department Of)
GTM	Guatemala (Republic of)
GUF	Guiana (French Department of)
GUY	Guyana
HTI	Haiti (Republic of)
HND	Honduras (Republic of)
MRT	Martinique (French Department of)
NCG	Nicaragua
PNR	Panama (Republic of)
PRG	Paraguay (Republic of)
PRU	Peru
PTR	Puerto Rico (including Culebra, Mona, and Vieques)
SCN	Saint Christopher and Nevis
LCA	Saint Lucia
VCT	St. Vincent and the Grenadines
SUR	Suriname (Republic of)
TRD	Trinidad and Tobago
VIR	United States Virgin Islands (St. Croix, St. John, St. Thomas)
URG	Uruguay (Eastern Republic of)
VEN	Venezuela (Republic of)

Table F-D-D-6. Country listing for USSOUTHCOM

ANNEX E TO APPENDIX D TO ENCLOSURE F

SAMPLE DATA CALL

1. The following is a sample AUTODIN/DMS data call message for JTF component force input into a JTF JCEOI.

FM JTF XRAY//J6//
TO AIG #####
BT
UNCLAS
EXER/JTF X//
MSGID/GENADMIN//

SUBJ/RBECs DATA CALL//
REF/A/CON/JTFX/970110//
RMKS/1. PER REF A, THE FOLLOWING PROCEDURES ARE PROVIDED TO STREAMLINE THE DEVELOPMENT OF THE JTF "X" UMBRELLA JCEOI.

REQUIREMENTS MUST BE SUBMITTED IN RBECs FORMAT IN RAW FORM. THE JCEOI WILL BE A SINGLE GENERATION JCEOI AND GENERATED BY THE JSME JTF "X" ON D-5.
INPUT IS DUE NLT D-6.

MASTER NET LIST

10 CIRCUITS

EXAMPLE:

JOINT CIRCUITS

NAME/DESCRIPTION NET C O RESTRICTIONS FREQ P REUSE

CALLWORD

ID S C W CL ZN

JTF 19A xxx N N C 3 1 15

NOTES:

a. TYPE "XXX" IN NET ID IF CUE/MAN FREQS ARE REQUIRED FOR SINGARS USE UNLESS PREDESIGNATED NET ID IS USED.

b. THE NET NAME ALLOWS 16 CHARACTERS; ENSURE THAT NO DUPLICATES APPEAR IN YOUR COMPONENT MNL TO AVOID JRFL CONFUSION.

c. ENTER "Y" IN CS COLUMN IF CALL SIGN REQUIRED. ENTER "N" IN CS COLUMN IF NO CALL SIGN REQUIRED.

d. RESTRICTION CODES ARE AS FOLLOWS:

A – 2-6 MHz

B – 6-10 MHz

C – 10-18 MHz

D – 18-29 MHz

E – AREA RESTRICTION "BRAVO"

F – AREA RESTRICTION "GOLF"

G – P ARE USER DEFINABLE RESTRICTIONS THAT MUST BE IDENTIFIED TO THE JSME IN A SEPARATE DOCUMENT.

e. ORGANIZATION CODE (OC). THE FOLLOWING OCs APPLY:

JNT NETS OC # 1

ARFOR OC # 2

NAVFOR OC # 3

JSOTF and MARFOR OC # 4

AFFOR OC # 5

UN and COALITION OC # 6

f. PW IS THE POWER FIELD. CHANGE POWER LEVEL AS REQUIRED.

1 VERY HIGH POWER

2 HIGH POWER

3 MEDIUM POWER

4 LOW POWER

DEFAULT IS 1

g. REUSE PLAN WILL BE AS NECESSARY. BE PREPARED TO IMPLEMENT COMPONENT REUSE PLAN LATER IF NECESSARY.

h. CALLWORD FIELD

(1) ENTER A 5 OR 15 DESIGNATION UNLESS A FIXED CALLWORD IS DESIRED. IF SO, DECONFLICT WITH THE JTF "X" CALLWORD DICTIONARY ON THE JTF "X" WEB SERVER AS FILE CALL9705.05C AND CALL970315.15C. IF BUTTON NUMBER OR COLORWORD IN THIS FIELD PLEASE SPECIFY.

(2) ANY CALLWORDS THAT CONFLICT WILL BE REPLACED BY A RANDOMLY GENERATED CALLWORD. FIXED CALLWORDS WILL ONLY BE USED ON COVERED NETS.

2. COMPONENTS ARE REQUIRED TO SUPPLY ALL AIR ASSETS TO THE JSME ON A SEPARATE DOCUMENT FOR CALLWORD ASSIGNMENTS THAT WILL BE INCLUDED IN THE ATO. THIS IS TO INCLUDE BUT NOT LIMITED TO ROTARY WING AIRCRAFT.

3. WHEN SUBMITTING RAW DATA ENSURE TO INCLUDE FREQUENCY SEPARATION PLANS, NET GROUPS, FREQUENCY AND CALLSIGN AND/OR CALLWORD SHARING PLANS.

4. SMOKE AND/OR PYROTECHNIC, SUFFIX AND/OR EXPANDER SHOULD BE DEFINED, SET FOR THE THEATER, AND ASSIGNED IN THE RBECS OR JACS PROGRAM.

5. ENSURE TO INCLUDE SUFFIX AND EXPANDER LISTS, THESE WILL BE STANDARD FOR THE ENTIRE TASK FORCE.

6. THE JSME WILL ASSIST UN AND COALITION FORCES WITH THE JCEOI DEVELOPMENT.

7. THE ACTIVE EDITION WILL BE AVAILABLE AT D-5 ON THE JTF WEB SERVER, COORDINATE FOR SPECIAL TRANSMISSION INSTRUCTIONS.

8. THE JSME WILL GENERATE 3 10 TIME PERIODICES: ONE ACTIVE FOR DISTRIBUTION TO THE TASK FORCE ON D-3, ONE RESERVE EDITION HELD BY THE JSME AND COMPONENT LEVEL J6, AND ONE ON THE SHELF COPY HELD BY THE JSME.

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ANNEX F TO APPENDIX D TO ENCLOSURE F

SAMPLE JTF FREQUENCY REQUEST MESSAGE

1. The following is a sample AUTODIN/DMS data call message to JTF component forces for SFAF requests for a JTF operation.

FM JTF XRAY//J6//
TO AIG #####
BT
UNCLAS
EXER/JTF X//
MSGID/GENADMIN//

SUBJ/JTF FREQUENCY REQUEST PROCEDURES//
REF/A/CON/JTFX/970110//
RMKS/1. PER REF A, THE FOLLOWING PROCEDURES ARE
PROVIDED TO ADEQUATELY SUPPLY THE JTF WITH THE NEEDED
SPECTRUM REQUIREMENTS. INPUT IS DUE NLT D-30.

COMPONENT HQs WILL CONSOLIDATE AND FORWARD ALL
FREQUENCY REQUESTS TO THE JSME. FREQUENCY REQUESTS
MUST BE SUBMITTED IN ACCORDANCE WITH HEADQUARTERS
USEUCOM SMM. ALL REQUESTS MUST CONTAIN THE FOLLOWING
MANDATORY STANDARD ITEMS:

- 005. U (CLASSIFICATION)
- 010. N (TYPE OF ACTION)
- 102. JTFXNNNNNN (AGENCY SERIAL NUMBER)
 - JOINT REQUESTS 970001 TO 971000
 - ARFOR REQUESTS 971001 TO 972000
 - ARFOR REQUESTS 971001 TO 972000
 - AFFOR REQUESTS 973001 TO 974000
 - NAVFOR REQUEST 974001 TO 975000
 - JFACC REQUESTS 975001 TO 976000
- 104. JTFXJSME (ASSIGNMENT AUTHORITY)
- 110. M35.000 (FREQUENCY)
- 113. ML (STATION CLASS)
- 114. 3K00J3E (EMISSION DESIGNATOR)
- 115. W35 (TRANSMIT POWER)
- 140. 20000701 (START DATE)

- 141. 20000731 (STOP DATE)
- 144. O (RECORD INDICATOR)
- 200. JNTSVC (AGENCY)
- 201. UNIFIED COMMAND
- 202. AFFOR/ARFOR/NAVFOR/MARFOR (UNIFIED COMMAND SERVICE).
 - JTF### JOINT NETS
 - CTF### ARFOR
 - CTF### MARFOR
 - CTF### NAVFOR
 - CTF### AFFOR
 - CTF### JSOTF
 - CTF### JFACC
 - CTF### UN/COALITION
- 204. COMMAND IS ARFOR, NAVFOR, MARFOR, AFFOR ETC. (COMMAND)
- 206. FREQ MGR
- 207. OPERATING UNIT (OPERATING UNIT)
- 300. XXX (TRANSMITTER LOCATION STANDARDIZED STATE/COUNTRY CODE)
 - 301. XXXXXXXX XXXXX (TRANSMITTER ANTENNA LOCATION)
 - 303. 000000X/0000000X (TRANSMITTER LATITUDE/LONGITUDE)
 - 340. G,AN/TRC-170 OR
C,MOT1354 (TRANSMITTER EQUIPMENT NOMENCLATURE)
 - 400. STATE /COUNTRY (RECEIVER ANTENNA LOCATION)
 - 401. ANTENNA LOCATION (RECEIVER ANTENNA LOCATION)
 - 403. 000000X0000000X (RECEIVER LATITUDE LONGITUDE)
 - 440. G,AN/TRC-170 OR
C,MOT1354 (RECEIVER EQUIPMENT NOMENCLATURE)
 - 502. OPERATION XXXXX (DESCRIPTION OF REQUIREMENT)
 - 702. LOCAL CONTROL NUMBER (CONTROL/REQUEST NUMBER)
 - 910. OPERATION XXXXXXXX XXXXXXXX (EXERCISE / PROJECT)
- 2. THESE REQUIREMENTS WILL BE SUBMITTED ELECTRONICALLY IN SEPARATE VERTICAL SFAF RECORDS. NO PARTED, ABBREVIATED, OR ABC METHOD (E.G., PART 2 SAME AS PART 1 EXCEPT) MESSAGES WILL BE ACCEPTED.
- 3. ALL SATELLITE REQUESTS AND ASSIGNMENTS MUST INFO JSME FOR ADDITION INTO THE EMB DATABASE.
- 4. THE ELECTROMAGNETIC ENVIRONMENT FOR AREA, "X" IS LOCATED ON THE SIPRNET AT 111.111.1111. IT IS A SPAWNED DATA FILE OR ON THE JTF "X" WEB SERVER NAMED "JTFEME.SPN".

APPENDIX E TO ENCLOSURE F
JOINT RESTRICTED FREQUENCY LIST

1. Introduction. The JRFL is a list that operational, intelligence, and support elements use to identify the level of protection desired to various nets and frequencies. This list must be used during EW mission planning to preclude listed frequencies from being interfered with. It will be limited to the minimum number of frequencies necessary for friendly forces to accomplish JTF objectives. Large, unwieldy JRFLs in the past resulted in this important document being utilized.

2. Definitions

a. TABOO. Any frequency of such importance that it must never be deliberately jammed or interfered with by friendly forces. This includes international distress, stop buzzer, safety and controller frequencies. Component operations and communications elements designate and update this list.

b. PROTECTED. Friendly forces operational frequency of such critical importance that jamming should be restricted unless necessary or until it is coordinated. Component operations and communications elements designate and update this list.

c. GUARDED. Enemy frequencies currently being exploited for combat information and intelligence. This list is time-oriented in that the list changes as the enemy assumes different combat postures. These may be jammed if the IO cell determines the operational gain is greater than the information lost. The J-2 designates and updates this list.

3. JRFL Production Process. See Figure F-E-1.

a. Identification. The JRFL identification process begins at the unit level and works upward through component service chain-of-command channels. The JTF staff, along with other forces, will identify to the JSME those frequencies that will be included in the JRFL. Input to the JSME will be in the form of JCEOI nets, frequencies in the database, and frequencies identified by the various elements of the J-2, J-3, and J-6. These frequencies will be identified to the IO cell for coordination.

b. Consolidation. These frequencies, along with any frequencies similarly identified by the component forces, are consolidated by the JSME into a JRFL. All generated JCEOIs for the JTF will be provided to

the JSME. Included will be listing of international TABOO frequencies. The JSME will enter all inputs into Spectrum XXI and generate an initial JRFL list.

c. Review and Dissemination. This initial list is taken to the IO cell for coordination and deconfliction. Once approval is received from the J-3, the JRFL is distributed; this is generally the responsibility of the J6.

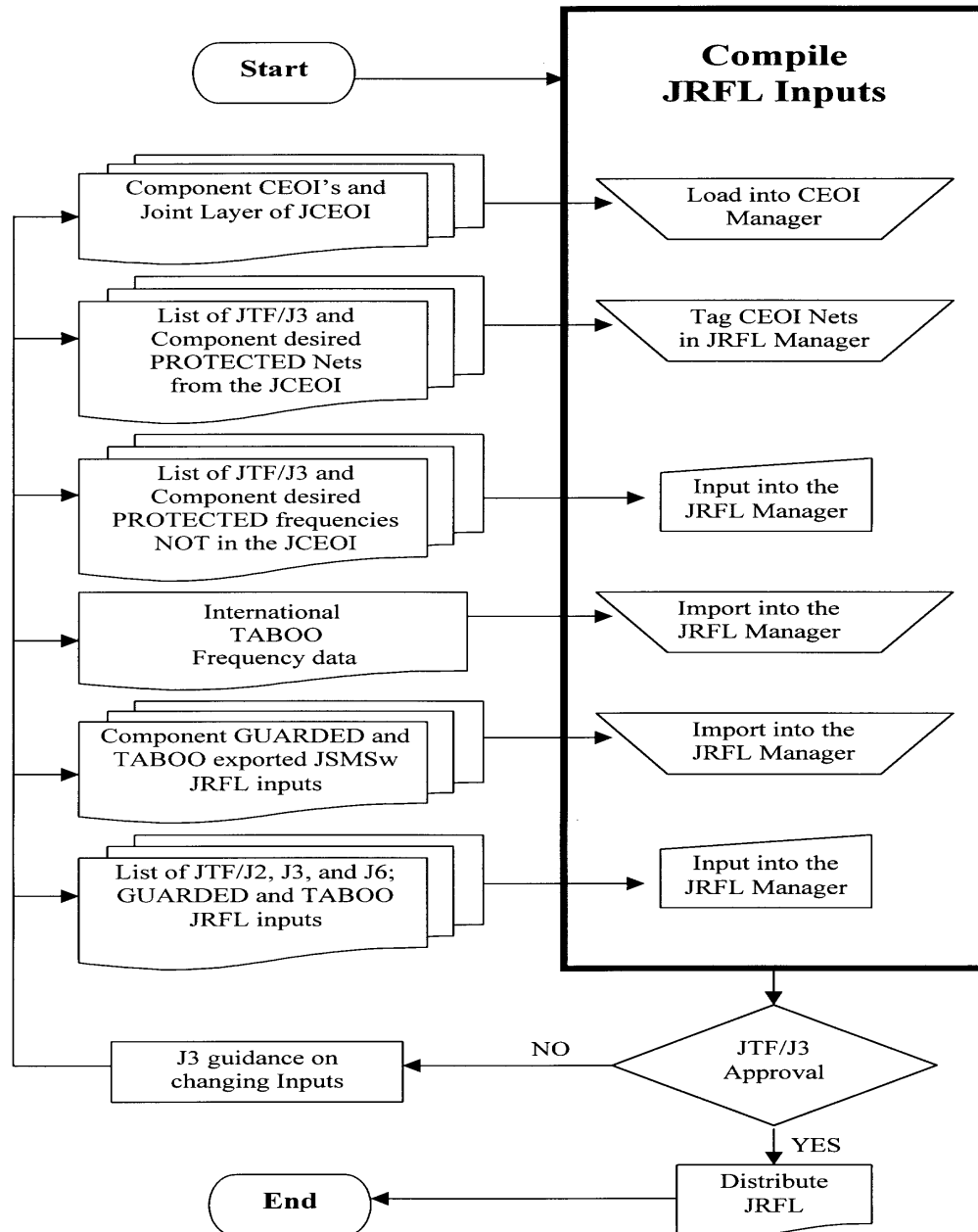


Figure F-E-1. The JRFL Process

4. The following is a list of data fields that are needed to complete the JRFL report in Spectrum XXI.

a. Classification. One character indicates the security classification of the JRFL.

(1) U=UNCLASSIFIED

(2) C=CONFIDENTIAL

(3) S=SECRET

b. Declassification. The declassification date for the frequencies to be protected.

c. Unit. Name of the unit to which the frequency is assigned.

d. Status. Restricted classification status followed by a slash (/) and two characters to indicate the level of restriction, A-Z and 1-9, with A1 being the highest level.

(1) T=TABOO

(2) G=GUARDED

(3) P=PROTECTED

e. Period. The time-period for which the restriction will be active. This refers to the JCEOI time-period.

f. Start Date. The date on which the restriction will begin.

g. End Date. The date on which the restriction will end.

h. Start Hour. The hour on which the restriction will begin.

i. End Hour. The hour on which the restriction will end.

j. Agency Serial. A unique agency identifier for each frequency assignment (SFAF Item 102).

k. Frequency. The frequency to be restricted.

l. Emission. The bandwidth and emission designator of the equipment (SFAF Item 114).

m. Power. The transmitter power preceded by the unit indicator (SFAF Item 115). Unit indicators are as follows:

- (1) W – watts
- (2) K – kilowatts
- (3) M – megawatts
- (4) G – gigawatts

n. Transmitter Lat-Long. The latitude and longitude of the transmitter location in degrees, minutes, and seconds, followed by N or S for the latitude and E or W for the longitude.

o. Receiver Lat-Long. The latitude and longitude of the receiver location in degrees, minutes, and seconds, followed by N or S for the latitude and E or W for the longitude.

p. Equipment. Enter the equipment name.

q. Comments. Enter all remarks, limitations, and comments.

5. Listed below in Table F-E-1 are the worldwide restricted frequency listings:

FREQUENCY	USE
K490	Meteorological Navigation Warnings
K500	Distress and Calling
K518	Meteorological Navigation Warnings
K2174.5	International Distress and Safety
K2182	International Distress
K2187.5	International Distress and Safety
K3023	International Search and Rescue
K4125	International Distress and Safety
K4177.5	International Distress and Safety
K4207.5	International Distress and Safety
K4209.5	Meteorological Navigation Warnings
K4210	International Maritime Navigation Warnings
K5680	International SAR
K6215	International Distress and Safety
K6268	International Distress and Safety
K6312	International Distress and Safety

K6314	International Maritime Safety
K8291	International Distress and Safety
K8364	International SAR/Survival Craft
K8376.5	International Distress and Safety
K8414.5	International Distress and Safety
K8416.5	International Maritime Safety
K10003	SAR Operations of Manned Space Vehicles
K12290	International Distress and Safety
K12520	International Distress and Safety
K12577	International Distress and Safety
K12579	International Navigation Safety
K14350	SAR Amateur Resolution 640
K14993	SAR Operations of Manned Space Vehicles
K16420	International Distress and Safety
K16695	International Distress and Safety
K16804.5	International Distress and Safety
K16806.5	International Maritime Safety
K18068	SAR Amateur Resolution 640
K19680.5	International Maritime Safety
K19993	SAR Operations of Manned Space Vehicles
K22376	International Maritime Safety
K26100.5	International Maritime Safety
M121.5	International Distress/Aeronautical Emergency
M123.1	International Emergency/SAR
M156.3	International Ship/Aircraft SAR
M156.525	International Distress/Safety
M156.65	International Safety of Navigation
M156.8	International Distress and Safety
M243	Aeronautical Emergency/Intl Distress/SAR
M406	Satellite EPIRB
M406.1	Satellite EPIRB
M1030	NAVAIDS
M1090	Satellite EPIRB
M1645.5-M1646.5	NAVAIDS

Table F-E-1. Worldwide Restricted Frequency List

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APPENDIX F TO ENCLOSURE F

SPECTRUM MANAGEMENT CONSIDERATIONS IN A MULTINATIONAL
AND COALITION ENVIRONMENT

1. Introduction. Past operations, from DESERT SHIELD and DESERT STORM to ALLIED FORCE, demonstrate the need for aligning DOD spectrum management policies and procedures with those of US allied and coalition partners. US spectrum managers must be prepared to integrate US spectrum requirements into a coalition spectrum-use plan to support the mission. However, the development of specific procedures to support this requirement is made more difficult because of concise security guidance, differences in the level of training, different automation tools, support communication networks, and some language and terminology barriers. The following information is provided to highlight some areas of which the US spectrum manager must be aware when operating in a multinational and/or coalition environment.

2. Areas of Concern. US spectrum managers must be prepared to address these issues, at a minimum, when operating in a multinational and/or coalition environment:

a. Security. The JTF Intelligence Officer must provide foreign disclosure guidelines early enough in the operational planning phases to facilitate the flow of information. The following are some specific items to consider.

(1) Frequency Assignment Databases. Ensure the appropriate special handling code is entered in SFAF item 005.

(2) JF-12s. Some equipment information may not be releasable to all countries involved in an operation. Each JF-12 should be scrutinized to determine which countries enjoy foreign disclosure authority. If the JF-12 data cannot be released to all the countries, then that information should not be entered into the proposal or assignment that is being coded into the releasable portion of the database.

(3) Communications Networks. Due to the different communication networks that can be used to support coalition and allied operations, network security and releasability issues need to be addressed with local security and intelligence officers at the earliest point possible to facilitate the flow of information between coalition and allied

and US spectrum management functions. If an unclassified network is used, OPSEC must be addressed to determine what information can or cannot be released.

b. Personnel. Allied and coalition spectrum managers may not be trained to the same standards as US spectrum managers. They have different automation capabilities, responsibilities, and national requirements. US spectrum managers could expect to find they are the most experienced (according to US standards) and, at the same time, the lowest ranking person in the spectrum management cell. US spectrum managers can be expected to lead the overall database management effort and provide training to their allied counterparts on the US automation tools used.

c. Automation Tools

(1) Spectrum XXI. This software tool is the standard in the Department of Defense for maintaining the tactical frequency assignment database for contingency operations and today is readily accepted in most areas in which the United States maintains a presence. The difficulties the US spectrum manager encounters exist due to the releasability of the software. Currently Spectrum XXI is not releasable to any single country that has not purchased the software through the USG Foreign Military Sales program. In other words, US spectrum managers cannot arbitrarily release the software to non-US nationals. The spectrum managers should be able to obtain guidance from their combatant command. Data standardization is very important when analyzing information contained in the database. US spectrum managers should refer to US MCEB Publication 7, combatant command publications, instructions, and JTF written procedures for specific guidance on frequency proposal formatting.

(2) RBECS. This software tool also a joint standard in the Department of Defense, and is used to develop and manage the JCEOI. Most coalition countries do not have RBECS; therefore, US spectrum managers can expect to receive JCEOI inputs in various forms. They must then manually input the coalition requirements before generation of the JCEOI. JACS is the next generation of RBECS. JACS will provide a common tool that will interface between spectrum managers and communication planners, allowing for automated transfer of information that is easily understood by both parties.

d. Coordination

(1) Information Operations. The requirement for information superiority in the battle space has increased the importance of management of spectrum use. IO encompass the means for the JTF commander to achieve information superiority. The US spectrum manager must ensure that the appropriate contacts within the intelligence, operations, and communications branches of the coalition task force are coordinating information relevant to the IO effort. Information such as targeting data (location), offensive and defensive weapons requirements, etc., should have a direct effect on the JRFL. It is imperative the spectrum manager be made aware of all spectrum usage within the AOR for a successful IO campaign.

(2) Frequency Assignment Authority. Identification of the frequency assignment authority must be made early in the planning process. This initiates decisions that enable the development of essential processes. The resulting procedures would then be incorporated into the specific OPLAN and corresponding annexes.

3. Conclusion. Military operations outside the US&P and its possessions can present a variety of challenges and sometimes-unique situations relative to spectrum management. The US spectrum manager must be flexible and be able to take the lead in a coalition and allied spectrum management function. Operations involving the forces of other nations increase the difficulty of maintaining an electromagnetically compatible environment. Resolving the issues mentioned in this chapter early on would greatly aid the spectrum managers in accomplishing their tasks to support mission goals.

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ENCLOSURE G

REFERENCES

- a. DODD 4630.5, 11 January 2002, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)"
- b. JP 3-51, "Joint Doctrine for Electronic Warfare"
- c. ACP 190 US SUPP-2, "Coordination and Registration of Frequencies Used by Military Forces on Foreign Soil (C)"
- d. CEOI Sup 1, "Contingency Joint Communications-Electronics Operation Instructions (JCEOI) Supplemental Instructions"
- e. JP 1-02, "Department of Defense Dictionary of Military and Associated Terms"
- f. CJCSM 3150.01, "Joint Reporting Structure General Instructions"
- g. CJCSM 3122.01 Series, "Joint Operational Planning and Execution System, Vol. I"
- h. CJCSI 3320.02A Series, "Joint Spectrum Interference Resolution"
- i. DOD JSC HDBK-80-11-1, November 1996, "Frequency Resource Record System (FRRS) Handbook Volume I"
- j. ACP 190(A), "Guide to Frequency Planning"
- k. CJCSI 3210.03A Series, "Joint Electronic Warfare Policy"
- l. CJCSI 3320.01 Series, "Electromagnetic Spectrum Use in Joint Military Operations"
- m. CJCSI 3320.03 Series, "Joint Communications Electronic Operation Instructions (JCEOI)"
- n. JP 0-2, "Unified Action Armed Forces (UNAAF)"
- o. JP 1, "Joint Warfare of the Armed Forces of the United States"
- p. JP 3-0, "Doctrine for Joint Operations"

- q. JP 3-13, "Joint Doctrine for Information Operations"
- r. JP 5-00.2, "Joint Task Force Planning Guidance and Procedures"
- s. JP 6-0, "Doctrine for Command, Control, Communications, and Computers (C4) Systems Support to Joint Operations"
- t. JP 6-02, "Joint Doctrine for Employment of Operational/ Tactical Command, Control, Communications, and Computer Systems"
- u. AR 5-12, December 1996, "Army Management of the Electromagnetic Spectrum"
- v. International Telecommunication Union Radio Regulations, 1990
- w. US Department of Commerce, National Telecommunications and Information Administration, "Manual of Regulations & Procedures for Federal Radio Frequency Management," September 1995 Edition

GLOSSARY

PART I—ABBREVIATIONS AND ACRONYMS

ACP	Allied Communications Publication
AFFOR	Air Force forces
ALT	alternate
AM	amplitude modulation
AMEMB	American embassy
AOI	area of influence
AOR	area of responsibility
ARDG	Arc-Second Raster Chart digitized raster graphic
ARFOR	Army forces
ATO	air tasking order
AUTODIN	Automatic Digital Information Network
BEI	background environmental information
C2	command and control
C3	command, control, and communications
C4	command, control, communications, and computers
CAP	crisis action planning
CD-ROM	computer disk read-only memory
C-E	communications-electronics
CEOI	Communications-Electronics Operation Instructions
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CJCSM	Chairman of the Joint Chiefs of Staff Manual
CJTF	commander, joint task force
CMOC/SCC	Cheyenne Mountain Operations Center/Satellite Communications Control
COA	course of action
COCOM	combatant command (command authority)
COF	conduct of fire
COMUSFOR	Commander, United States Forces
CONPLAN	operation plan in concept format
CPU	central processing unit
CRC	control and reporting center
CRP	control and reporting post
CTF	combined task force

DCN	Datalink Coordination Net
DCS	Defense Communications System
DISA	Defense Information Systems Agency
DOD	Department of Defense
DSN	Defense Switched Network
DTED	Digital Terrain Elevation Data
E3	electromagnetic environmental effects
EEFI	essential elements of friendly information
EHF	extremely high frequency
EMB	electromagnetic battle space
EME	electromagnetic environment
EMI	electromagnetic interference
EOB	electromagnetic order of battle
EW	electronic warfare
FAX	facsimile
FCC	Federal Communications Commission
FLIP	flight information publication
FM	frequency modulated
FMS	Frequency Management Subcommittee
FRRS	Frequency Resource Records System
GB	gigabyte
GMF	government master file
HELO	helicopter
HERO	harmful electromagnetic radiation to ordnance
HF	high frequency
HQ	headquarters
IAW	in accordance with
IFL	International Frequency List
IO	information operations
ITU	International Telecommunications Union
J-1	manpower and personnel directorate of a joint staff
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
J-4	logistics directorate of a joint staff
J-5	plans and policy directorate of a joint staff
J-6	command, control, communications, and computer systems directorate of a joint staff
JACS	Joint Automated Communications-Electronics Operation Instructions (CEOI) System
JCCC	Joint Communications Control Center

JCEOI	Joint Communications-Electronics Operation Instructions
JCS	Joint Chiefs of Staff
JFACC	joint force air component commander
JFC	joint force commander
JFMO	Joint Frequency Management Office
JOPES	Joint Operation Planning and Execution System
JIOC	Joint Information Operations Center
JRFL	Joint Restricted Frequency List
JSC	Joint Spectrum Center
JSIR	joint spectrum interference resolution
JSME	Joint Task Force (JTF) Spectrum Management Element
JSOTF	joint special operations task force
JTF	joint task force
JULL	Joint Universal Lessons Learned
kHz	kilohertz
MARFOR	Marine Corps forces
MB	megabyte
MCEB	Military Communications-Electronics Board
MHz	megahertz
MNL	master net list
MRFL	master radio frequency list
NATO	North Atlantic Treaty Organization
NAVAIDS	navigational aids
NAVFOR	Navy forces
NF	naval fire
NIMA	National Imagery and Mapping Agency
NIPRNET	Non-Secure Internet Protocol Router Network
NSA	National Security Agency
OPLAN	operations plan
OPORD	operation order
OPSEC	operations security
PC	personal computer
POC	point of contact
PSYOP	psychological operations
RBECS	Revised Battlefield Electronic Communications-Electronics Operation Instructions (CEOI) System
RR	Radio Regulations (ITU)

SACC	supporting arms coordination center
SAR	search and rescue
SATCOM	satellite communications
SFAF	Standard Frequency Action Format
SFCP	shore fire control party
SIGINT	signals intelligence
SINCGARS	single channel ground and airborne radio system
SIPRNET	SECRET Internet Protocol Router Network
SHF	super-high frequency
SMM	spectrum management manual
SSB	single sideband
STU-III	secure telephone unit III
TACS	tactical air control system
TADIL	tactical digital information link
TF	task force
TPFDD	time-phased force and deployment data
TSK	transmission security key
TSN	Track Supervision Net
UHF	ultra-high frequency
UN	United Nations
US&P	United States and its possessions
USCENTCOM	United States Central Command
USEUCOM	United States European Command
USG	United States Government
USJFCOM	United States Joint Forces Command
USMTF	United States Message Text Format
USPACOM	United States Pacific Command
USSOCOM	United States Special Operations Command
USSOUTHCOM	United States Southern Command
USSTRATCOM	United States Transportation Command
VHF	very high frequency
VPN	Voice Product Net
WPM	words per minute

PART II -- TERMS AND DEFINITIONS

alert order. 1. A crisis action-planning directive from the Secretary of Defense, issued by the Chairman of the Joint Chiefs of Staff, that provides essential guidance for planning and directs the initiation of execution planning for the selected course of action authorized by the Secretary of Defense. 2. A planning directive that provides essential planning guidance and directs the initiation of execution planning after the directing authority approves a military course of action. An alert order does not authorize execution of the approved course of action. (JP 1-02)

allocation (of a frequency band). Entry in a table of frequency allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radio communications services or the radio astronomy service under specified conditions. This term will also be applied to the frequency band concerned (from ITU RR).

area of influence. A geographical area wherein a commander is directly capable of influencing operations by maneuver or fire support systems normally under the commander's command or control. (JP 1-02)

area of interest. That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory to the objectives of current or planned operations. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission. Also called **AOI**. (JP 1-02)

area of responsibility. 1. The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. 2. In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation. Also called **AOR**. (JP 1-02)

assignment (of a radio frequency or radio frequency channel). Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specific conditions (National Telecommunications and Information Administration Manual).

background environmental information. The combination of civilian electromagnetic communications infrastructure and the natural phenomena within an area of responsibility.

channeling plan. The plan by which frequencies within a band are to be assigned.

combatant command. A unified or specified command with a broad continuing mission under a single commander established and so designated by the President, through the Secretary of Defense and with the advice and assistance of the Chairman of the Joint Chiefs of Staff. Combatant commands typically have geographic or functional responsibilities. (JP 1-02)

combatant command (command authority). Nontransferable command authority established by title 10 ("Armed Forces"), United States Code, section 164, exercised only by commanders of unified or specified combatant commands unless otherwise directed by the President or the Secretary of Defense. Combatant command (command authority) cannot be delegated and is the authority of a combatant commander to perform those functions of command over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. Combatant command (command authority) should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Combatant command (command authority) provides full authority to organize and employ commands and forces as the combatant commander considers necessary to accomplish assigned missions. Operational control is inherent in combatant command (command authority). Also called **COCOM**. (JP 1-02)

combatant commander. A commander of one of the unified or specified combatant commands established by the President.

combined. Between two or more forces or agencies of two or more allies. (When all allies or services are not involved, the participating nations and services shall be identified, e.g., combined navies.) (JP 1-02)

combined force. A military force composed of elements of two or more Allied nations. (JP 1-02)

command and control warfare. The integrated use of operations security, military deception, psychological operations, electronic warfare, and physical destruction, mutually supported by intelligence, to deny information to, influence, degrade, or destroy adversary command and control capabilities, while protecting friendly command and control capabilities against such actions. Command and control warfare is an application of information warfare in military operations and is a subset of information warfare. Command and control warfare applies across the

range of military operations and all levels of conflict. Also called C2W. C2W is both offensive and defensive: a. **C2-attack**. Prevent effective C2 of adversary forces by denying information to, influencing, degrading, or destroying the adversary C2 system. b. **C2-protect**. Maintain effective command and control of own forces by turning to friendly advantage or negating adversary efforts to deny information to, influence, degrade, or destroy the friendly C2 system. (JP 1-02)

communications security. The protection resulting from all measures designed to deny unauthorized persons information of value that might be derived from the possession and study of telecommunications, or to mislead unauthorized persons in their interpretation of the results of such possession and study. Also called COMSEC. Communications security includes: cryptosecurity, transmission security, emission security, and physical security of communications security materials and information. (JP 1-02)

contingency master net list. A master net list developed for an operations plan to support requirements that can reasonably be expected in an area of responsibility.

contingency planning. The development of plans for potential crises involving military requirements that can reasonably be expected in an area of responsibility. Contingency planning is normally conducted during peacetime, but may be performed under crisis action conditions. Contingency planning for joint operations is coordinated at the national level by assigning planning tasks and relationships among the combatant commanders and apportioning or allocating to them the forces and resources available to accomplish those tasks. Commanders throughout the unified chain of command may task their staffs and subordinate commands with additional contingency planning tasks beyond those specified at the national level to provide broader contingency coverage.

controlling authority. The authority that is designated to a command or individual who has the responsibility for overall protection, distribution, and documentation of a JCEOI.

crisis. An incident or situation involving a threat to the United States, its territories, citizens, military forces, possessions, or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political, or military importance that commitment of US military forces and resources is contemplated in order to achieve national objectives. (JP 1-02)

crisis action planning. 1. The Joint Operation Planning and Execution System process involving the time-sensitive development of joint operation plans and orders in response to an imminent crisis. Crisis action planning follows prescribed crisis action procedures to formulate and implement an effective response within the time frame permitted by the crisis. 2. The time-sensitive planning for the deployment, employment, and sustainment of assigned and allocated forces and resources that occurs in response to a situation that may result in actual military operations. Crisis action planners base their plan on the circumstances that exist at the time planning occurs. Also called **CAP**. (JP 1-02)

deconfliction. A systematic management procedure to coordinate the use of the electromagnetic spectrum for operations, communications, and intelligence functions. This procedure minimizes possible interference issues that might arise after frequency assignment.

deliberate planning. The Joint Operation Planning and Execution System process involving the development of joint operation plans for contingencies identified in joint strategic planning documents. Conducted principally in peacetime, deliberate planning is accomplished in prescribed cycles that complement other Department of Defense planning cycles in accordance with the formally established Joint Strategic Planning System. 2. A planning process for the deployment and employment of apportioned forces and resources that occurs in response to a hypothetical situation. Deliberate planners rely heavily on assumptions regarding the circumstances that will exist when the plan is executed. (JP 1-02)

deployment database. The Joint Operation Planning and Execution System database containing the necessary information on forces, materiel, and filler and replacement personnel movement requirements to support execution. The database reflects information contained in the refined time-phased force and deployment data from the deliberate planning process or developed during the various phases of the crisis action planning process, and the movement schedules or tables developed by the transportation component commands to support the deployment of required forces, personnel, and materiel. (JP 1-02)

deployment planning. Operational planning directed toward the movement of forces and sustainment resources from their original locations to a specific operational area for conducting the joint operations contemplated in a given plan. Encompasses all activities from origin or home station through destination, specifically including intra-continental United States, inter-theater, and intratheater movement legs, staging areas, and holding areas. (JP 1-02)

DOD Standard Joint Communications Electronics Operation Instructions Information System. System designated by the Joint Chiefs of Staff as the standard for development and production of the JCEOI. Current standard system is RBECS. JACS is being implemented now in the forces for future DOD standard.

electromagnetic battle space. The electromagnetic battle space includes background environmental information and the hostile, friendly, UN, host nation, and coalition forces EOB within the JTF AOR and AOI.

electromagnetic compatibility. The ability of systems, equipment, and devices that utilize the electromagnetic spectrum to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. It involves the application of sound electromagnetic spectrum management; system, equipment, and device design configuration that ensures interference-free operation; and clear concepts and doctrines that maximize operational effectiveness. (JP 1-02)

electromagnetic-dependent equipment. The deliberate radiation, re-radiation, alteration, suppression, absorption, denial, enhancement, or reflection of electromagnetic energy in a manner intended to convey misleading information to an enemy or to enemy electromagnetic-dependent weapons, thereby degrading or neutralizing the enemy's combat capability.

electromagnetic environment. The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels that may be encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment. It is the sum of electromagnetic interference; electromagnetic pulse; hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightning and precipitation static. Also called **EME**. (JP 1-02)

electromagnetic environmental effects. The impact of the electromagnetic environment upon the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including electromagnetic compatibility and electromagnetic interference; electromagnetic vulnerability; electromagnetic pulse; electronic protection, hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightning and precipitation static. Also called **E3**. (JP 1-02)

electromagnetic interference. Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics and electrical equipment. It can be induced intentionally, as in some forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, intermodulation products, and the like. Also called **EMI**. (JP 1-02)

electromagnetic spectrum. The range of frequencies of electromagnetic radiation from zero to infinity. It is divided into 26 alphabetically designed bands. (JP 1-02)

electronic warfare. Any military action involving the use of electromagnetic and direct energy to control the electromagnetic spectrum or to attack the enemy. Also called EW. The three major subdivisions within electronic warfare are: electronic attack, electronic protection, and electronic warfare support. a. **electronic attack**. That division of electronic warfare involving the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called **EA**. EA includes: 1) actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and electromagnetic deception, and 2) employment of weapons that use electromagnetic or directed energy as their primary destructive mechanism (lasers, radio frequency weapons, particle beams). b. **electronic protection**. That division of electronic warfare involving passive and active means taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability. Also called **EP**. c. **electronic warfare support**. That division of electronic warfare involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition, targeting, planning and conduct of future operations. Thus, electronic warfare support provides information required for decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing. Also called **ES**. Electronic warfare support data can be used to produce signal intelligence, provide targeting for electronic or destructive attack, and produce measurement and signature intelligence. (JP 1-02)

employment planning. Planning that prescribes how to apply force and/or forces to attain specified military objectives. Employment planning concepts are developed by combatant commanders through their component commanders. (JP 1-02)

essential elements of friendly information. Key questions likely to be asked by adversary officials and intelligence systems about specific friendly intentions, capabilities, and activities, so they can obtain answers critical to their operational effectiveness. Also called **EEFI**. (JP 1-02)

execution planning. The phase of the Joint Operation Planning and Execution System crisis action planning process that provides for the translation of an approved course of action into an executable plan of action through the preparation of a complete operation plan or operation order. Execution planning is detailed planning for the commitment of specified forces and resources. During crisis action planning, an approved operation plan or other National Command Authorities-approved course of action is adjusted, refined, and translated into an operation order. Execution planning can proceed on the basis of prior deliberate planning, or it can take place in the absence of prior planning. Also called **EP**. (JP 1-02)

force module. A grouping of combat, combat support, and combat service support forces, with their accompanying supplies and the required nonunit resupply and personnel necessary to sustain forces for a minimum of 30 days. The elements of force modules are linked together or are uniquely identified so that they can be extracted from or adjusted as an entity in the Joint Operation Planning and Execution System databases to enhance flexibility and usefulness of the operation plan during a crisis. (JP 1-02)

frequency assignment. Authorization given by an administration, or other authority, for a radio station or other emitter to use a specific frequency under specified conditions.

generated joint communications electronics operation instructions. The final product of all inputs and consists of randomly generated data that was initially input into the UN-Generated JCEOI. From this product a user can define output pages and revise many of the products based on requirement changes or output options.

generation authority. The authority placed upon a staff component, individual, or commands having overall responsibility for generating the JCEOI. This includes gathering all information from subordinate elements, combining requirements, changes to the original document, and for creating reserve editions.

guarded frequencies. Enemy frequencies that are currently being exploited for combat information and intelligence. A guarded frequency is time-oriented in that the guarded frequency list changes as the enemy

assumes different combat postures. These frequencies may be jammed after the commander has weighed the potential operational gain against the loss of the technical information. (JP 1-02)

host nation support. Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, crisis or emergencies, or war based on agreements mutually concluded between nations. Also called **HNS**. (JP 1-02)

information operations. Actions taken to affect adversary information and information systems while defending one's own information and information systems. Also called **IO**. (JP 1-02)

integrated communications security. Systems designs that have in-line cryptographic hardware built into the system.

joint communications electronic operation instruction. A document that is created to provide the JFC the voice and data network architecture to support operations. This document provides the technical characteristics of the net. Also called **JCEOI**. The JCEOI contains or relates to the following subsections: a. **Call signs and call words** are utilized for identifying members of a net and/or circuit. 1) **Call sign**. Any combination of alphabetical characters or phonetically pronounceable characters (trigraph), which identifies a communication facility, a command, an authority, an activity or a unit; used primarily for establishing and maintaining communications. Also called **CS**. 2) **Call word**. Pronounceable words that identify a communications facility, a command, an authority, an activity, or a unit; serves the same functionality as the call sign. b. **Master net list**. The master net list, both generated and raw, is a basic part of all JCEOIs. As a minimum the master net list includes the circuit and/or net name, frequency or frequency band, call sign and/or call word requirements, and share group information. Also called **MNL**. It is usually subdivided in different sections, or layers. c. **Joint layer**. The inclusion of a circuit into the joint layer must meet at least one of the following requirements: 1) the net and/or circuit will be utilized by the joint force commander or joint force commanders staff for command and control of subordinate elements; 2) the joint force commander receives command and control orders on the net and/or circuit, or 3) The net and/or circuit is controlled by a single Service component and used by other Service components to coordinate support, fire control, safety or link up operations. d. **Additional layers**. Usually the master net list is further subdivided into other layers, such as the components, then corps, fleet, and/or wing, or further still as the generation authority directs. e. **Un-generated (or raw data) JCEOI**. Contains the MNL, call sign and/or call word dictionaries, index pages, reference pages, smoke and pyrotechnic

signals definitions, suffix and expander pages, page definition (net groups), separation plans, share plans and reuse plans. f. **Generated JCEOI.** The final product of all inputs and consists of randomly generated data that was initially input into the UN-Generated JCEOI. From this product a user can define output pages and revise many of the products based on requirement changes or output options. g. **Revised SINCGARS Integrated Communications Security (ICOM) and/or Non-ICOM Support Software “RSINISS.”** Currently a module in RBECS that supports the management of resources for the SINCGARS radio when it is authorized to frequency hopping information (hopsets), loadset (is a required output to the SINCGARS radio-transmitter that includes net ID, cryptographic key identification, and loadset ID), the generation and management of the TSK (which provides the SINCGARS radio with the sequence of frequency order it is to use in frequency hopping mode), and also includes the capability to create mobile subscriber equipment radio access unit frequency pairs.

joint force commander. A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called **JFC**. (JP 1-02)

joint operation planning. Planning for contingencies that can reasonably be anticipated in an area of responsibility or joint operations area of the command. Planning activities exclusively associated with the preparation of operation plans, operation plans in concept format, campaign plans, and operation orders (other than the Single Integrated Operational Plan) for the conduct of military operations by the combatant commanders in response to requirements established by the Chairman of the Joint Chiefs of Staff. Joint operation planning is coordinated at the national level to support Secretary of Defense Contingency Planning Guidance, strategic requirements in the National Military Strategy, and emerging crises. As such, it will cover joint operation planning, sustainment planning, and redeployment planning procedures. Joint operation planning is performed in accordance with formally established planning and execution procedures.

Joint Operation Planning and Execution System. A continuously evolving system that is being developed through the integration and enhancement of earlier planning and execution systems: Joint Operations Planning System and Joint Deployment System. It provides the foundation for conventional command and control by national- and theater-level commanders and their staffs. It is designed to satisfy their information needs in the conduct of joint planning and operations. Joint Operation Planning and Execution System (JOPES) includes joint operation planning policies, procedures, and reporting structures

supported by communications and automated data processing systems. JOPEs is used to monitor, plan, and execute mobilization, deployment, employment, and sustainment activities associated with joint operations. Also called **JOPEs**. (JP 1-02)

joint restricted frequency list. A time and geographically-oriented listing of TABOO, PROTECTED, and GUARDED functions, nets, and frequencies. It should be limited to the minimum number of frequencies necessary for friendly forces to accomplish objectives. Also called **JRFL**. (JP 1-02)

joint special operations task force. A joint task force composed of special operations units from more than one Service, formed to carry out specific special operation or prosecute special operations in support of a theater campaign or other operations. The joint special operations task force may have conventional non-special operations units assigned or attached to support the conduct of specific missions. Also called **JSOTF**. (JP 1-02)

joint task force. A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subunified commander, or an existing joint task force commander. Also called **JTF**. (JP 1-02)

on-the-job training. A method of military training that imparts knowledge of procedures to a trainee to accomplish a task without the trainee attending a class of formal instruction.

operational control. Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters

of administration, discipline, internal organization, or unit training. (JP 1-02)

operation plan. Any plan, except for the Single Integrated Operational Plan, for the conduct of military operations. Plans are prepared by combatant commanders in response to requirements established by the Chairman of the Joint Chiefs of Staff and by commanders of subordinate commands in response to requirements tasked by the establishing unified commander. Operation plans are prepared in either a complete format (OPLAN) or as a concept plan (CONPLAN). The CONPLAN can be published with or without a time-phased force and deployment data (TPFDD) file. a. **OPLAN** -- An operation plan for the conduct of joint operations that can be used as a basis for development of an operation order (OPORD). An OPLAN identifies the forces and supplies required to execute the [Combatant Commander's] Strategic Concept and a movement schedule of these resources to the theater of operations. The forces and supplies are identified in TPFDD files. OPLANs will include all phases of the tasked operation. The plan is prepared with the appropriate annexes, appendixes, and TPFDD files as described in the Joint Operation Planning and Execution System manuals containing planning policies, procedures, and formats. Also called **OPLAN**. (JP 1-02)

protected frequencies. Those friendly frequencies used for a particular operation, identified and protected to prevent them from being inadvertently jammed by friendly forces while active electronic warfare operations are directed against hostile forces. These frequencies are of such critical importance that jamming should be restricted unless absolutely necessary or until coordination with the using unit is made. They are generally time-oriented, may change with the tactical situation, and must be updated periodically. (JP 1-02)

redeployment. The transfer of forces and material to support another joint force commander's operational requirements, or to return personnel, equipment, and material to the home and/or demobilization stations for reintegration and/or out-processing. (JP 102)

Revised Battlefield Electronic Communications Electronics Operation Instructions System. Current DOD Standard software used to produce a JCEOI. (Department of Defense is moving to implement JACS as the standard in June 2003)

secure mode. A generic term referring to a method of communications that denies information to unauthorized recipients. The channel, circuit, and/or net is secured by physical means or by the provision of on-line crypto equipment (cryptographic), as appropriate.

Service component command. A command consisting of the Service component commander and all those Service forces, such as individuals, units, detachments, organizations, and installations under that command, including the support forces that have been assigned to a combatant command or further assigned to a subordinate unified command or joint task force. (JP 1-02)

sign and countersign. A confidential word challenge and its reply.

single channel ground and airborne radio system. A specific radio that has the capability to frequency hop from 30 MHz to 88 MHz ranges. Also called **SINCGARS**.

specified command. A command that has a broad, continuing mission, normally functional, and is established and so designated by the President through the Secretary of Defense with the advice and assistance of the Chairman of the Joint Chiefs of Staff. It normally is composed of forces from a single Military Department. Also called **specified combatant command**. (JP 1-02)

spectrum management. Planning, coordinating, and managing joint use of the electromagnetic spectrum through operational, engineering, and administrative procedures. The objective of spectrum management is to enable electronic systems to perform their functions in the intended environment without causing or suffering unacceptable interference. (JP 1-02)

subordinate command. A command consisting of the commander and all those individuals, units, detachments, organizations, or installations that have been placed under the command by the authority establishing the subordinate command. (JP 1-02)

supported commander. The commander having primary responsibility for all aspects of a task assigned by the Joint Strategic Capabilities Plan or other joint operation planning authority. In the context of joint operation planning, this term refers to the commander who prepares operation plans or operation orders in response to requirements of the Chairman of the Joint Chiefs of Staff. (JP 1-02)

TABOO frequencies. Any friendly frequency of such importance that it must never be deliberately jammed or interfered with by friendly forces. Normally, these frequencies include international distress, CEASE BUZZER, safety, and controller frequencies. These frequencies are generally long standing. However, they may be time-oriented in that, as

the combat or exercise situation changes, the restrictions may be removed.

task force. 1. A temporary grouping of units, under one commander, formed for the purpose of carrying out a specific operation or mission. 2. A semi-permanent organization of units, under one commander, formed for the purpose of carrying out a continuing specific task. 3. A component of a fleet organized by the commander of a task fleet or higher authority for the accomplishment of a specific task or tasks. Also called **TF**. (JP 1-02)

telecommunication. Any transmission, emission, or reception of signs, signals, writings, images, sounds, or information of any nature by wire, radio, visual, or other electromagnetic systems. (JP 1-02)

time-phased force and deployment data. The Joint Operation Planning and Execution System database portion of an operation plan; it contains time-phased force data, non-unit-related cargo and personnel data, and movement data for the operation plan, including the following: a. In-place units; b. Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation; c. Routing of forces to be deployed; d. Movement data associated with deploying forces; e. Estimates of non-unit-related cargo and personnel movements to be conducted concurrently with the deployment of forces; and f. Estimate of transportation requirements that must be fulfilled by common-user lift resources as well as those requirements that can be fulfilled by assigned or attached transportation resources. Also called **TPFDD**. (JP 1-02)

time-phased force and deployment list. A Joint Operation Planning and Execution System database located at Appendix 1 to Annex A of deliberate plans. It identifies types and/or actual units required to support the operation plan and indicates origin and ports of debarkation or ocean area. This listing is to include both a. In-place units; and b. Units to be deployed to support the deliberate plan. Also called the **TPFDL**. (JP 1-02)

unified command. A command with a broad continuing mission under a single commander and composed of significant assigned components of two or more Military Departments, that is established and so designated by the President through the Secretary of Defense with the advice and assistance of the Chairman of the Joint Chiefs of Staff. Also called **unified combatant command**. (JP 1-02)

warning order. 1. A preliminary notice of an order or action which is to follow. 2. (DOD only) A crisis action planning directive issued by the

Chairman of the Joint Chiefs of Staff that initiates the development and evaluation of courses of action by a supported commander and requests that a commander's estimate be submitted. 3. (DOD only) A planning directive that describes the situation, allocates forces and resources, establishes command relationships, provides other initial planning guidance, and initiates subordinate unit mission planning. (JP 1-02)

14 point format. The US European and Central Command's frequency action message format for frequency requests and assignments.